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ABSTRACT

This curriculum guide, which is intended for middle school agriculture teachers in Virginia, outlines a three-course competency-based agriscience program to give middle school students an understanding of basic science concepts through agriculture. The guide begins with a program description that includes descriptions of the program's three courses for students in grades 6, 7, and 8. The courses cover the following topics: agriscience (agriculture, plant and animal life cycles, communication with others, agricultural mechanics technology, ecology and conservation, career opportunities in agriculture); agriscience exploration (importance of agriculture/agriscience, conserving natural resources, research in agriculture, plant science, animal science, basic laboratory skills, personal development); and agriscience and technology (new technologies in agriculture/agriscience, international agriculture, agricultural businesses, microcomputers in agriculture, supervised agricultural experiences, hand tools and agricultural power equipment, leadership skills, and experimentation in agriculture). Suggested duty areas and tasks/competencies for each course are listed. Presented next (and constituting approximately 60% of the guide) are detailed matrices in which language arts, mathematics, and science standards of learning are cross-referenced to the competencies/tasks covered in each of the courses and their suggested duty areas. Concluding the guide is a 26-item list of suggested agriscience education resources. (MN)

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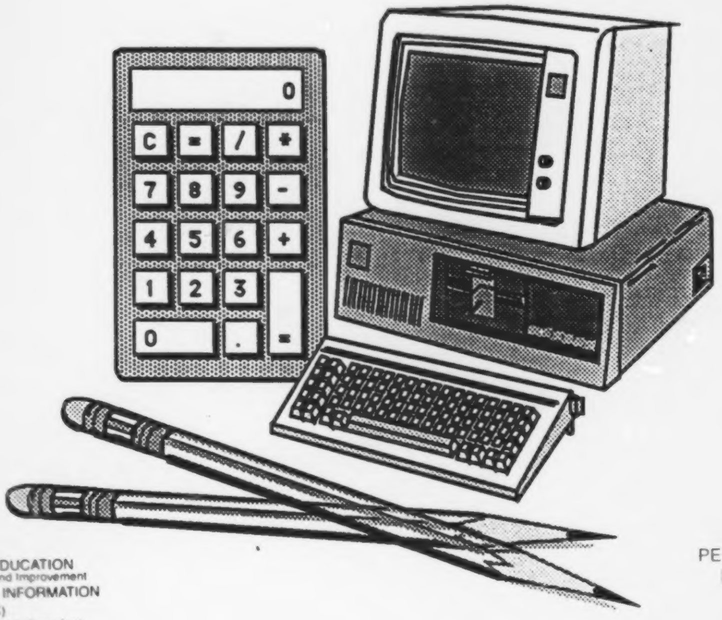
AGRISCIENCE EDUCATION

FOR THE MIDDLE SCHOOL



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FOR THE
MIDDLE SCHOOL

Developed by

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INTRODUCTION

The Agriscience Education curriculum augments the Virginia middle school philosophy by providing students with an understanding of basic science concepts through agriculture. These basic concepts are taught using the medium of the food and fiber system of agriculture. The agriculture teacher is able to capture the students' interest by bringing living aspects of science to the classroom for experimentation and observation.

As teachers of Agricultural Education cooperate with teachers of the middle school subject areas in developing activities and projects, students will more clearly understand the application of school to real life. Furthermore, teachers and students will obtain increased satisfaction and enjoyment from education.

This curriculum guide is only a foundation upon which individual teachers can build personal courses of study. Teachers are encouraged to meld their own material and instructional activities with the suggestions in this guide.

PROGRAM: AGRISCIENCE EDUCATION

Description: This program is designed to introduce agriscience to all middle school students. Through the program, students become aware of, explore, and apply science to agriculture, thus developing an understanding of the nature of science and its application in the food and fiber system.

CIP Code: 01.999

Suggested Grade Level: 6, 7, 8

Approved Courses:
Introduction to Agriscience 8002
Agriscience Exploration 8003
Agriscience and Technology 8004

Course:
Introduction to Agriscience 8002
18 weeks or less (6th grade)

This course is designed to develop in middle school students an awareness of the relationships betweeen agriculture and science. Major concepts covered in the course include an awareness of agriculture, the world of work, agribusiness careers, human relations, and scientific principles applied in agriculture. The course is offered on a semester or less basis for sixth-grade students.

Course:
Agriscience Exploration 8003
18 weeks (7th grade)

This course is designed to assist students in exploring science as it relates to agriculture. Through well planned instructional activities, students have the opportunity to develop an understanding of human relations, communication, the importance of agriculture to the economy, and key scientific terms related to the field of agriculture. The course is offered on a semester basis for seventh-grade students.

Course:
Agriscience and Technology 8004
18 or 36 weeks (8th grade)

This course is designed to allow students to apply scientific principles to the field of agriculture in a laboratory setting. The students are introduced to new technology and its impact on agriculture. An introduction to international agriculture and new strategies in marketing agricultural products are also included. The course is offered for a semester or for a full year for eighth-grade students.

INTRODUCTION TO AGRISCIENCE 8002

GRADE 6 (18 weeks or less)

SUGGESTED DUTY AREAS

Duty Area 0	Becoming Oriented to Agriscience
Duty Area 1	Describing Agriculture
Duty Area 2	Introducing Plant and Animal Life Cycles
Duty Area 3	Communicating with Others
Duty Area 4	Introducing Agricultural Mechanics Technology
Duty Area 5	Introducing Ecology and Conservation
Duty Area 6	Identifying Career Opportunities in Agriculture

DUTY AREA 0

BECOMING ORIENTED TO AGRISCIENCE

COMPETENCY/TASK

0.1 Explore ideas associated with agriculture.

0.2 Identify class rules and procedures.

Application Examples

1. Complete a student survey.
2. Review class rules.
3. Tour the agricultural education facility.

DUTY AREA 1

DESCRIBING AGRICULTURE

COMPETENCY/TASK

1.1 Define agriculture/agriscience.

1.2 Discuss the impact of agriculture on the world economy.

1.3 Identify the key factors that have shaped the agricultural industry in the United States.

1.4 Describe the interdependency of agriculture and other segments of society.

1.5 Identify current research and development activities in agriculture.

Application Examples

1. List ten agricultural crops in Virginia.
2. Trace the flow of an agricultural product from the farm to the table.
3. List ten agribusinesses found in Virginia.
4. Prepare and present a short report on the development of new technologies in agriculture.
5. Tour a local farm to observe production agriculture.
6. Tour a local agribusiness to observe the business of agriculture.
7. Tour a local farm or agribusiness to observe new technology.

DUTY AREA 2

INTRODUCING PLANT AND ANIMAL LIFE CYCLES

COMPETENCY/TASK

2.1 Identify and explain functions of plant systems.

2.2 Identify basic requirements for plant growth and development.

2.3 Identify plants of economic importance to the community.

2.4 Identify basic requirements for animal growth and development.

2.5 Identify careers in plant science.

2.6 Identify careers in animal science.

Application Examples

1. Label the parts of a plant. Explain the purpose of each part.
2. Germinate seeds.
3. Tour a local farm and agribusiness.
4. Transplant a plant.
5. Tour a greenhouse.
6. Make a bulletin board display showing major parts of a plant.
7. Write a letter to a person new to plant production, and explain the importance of photosynthesis.

DUTY AREA 3

COMMUNICATING WITH OTHERS

COMPETENCY/TASK

3.1 Discuss the importance of effective communication.

3.2 Participate in a group discussion.

3.3 Communicate on the telephone.

3.4 Communicate through letters.

3.5 Communicate through newspapers, radio, and television releases.

Application Examples

1. Organize and present a short speech.
2. Demonstrate proper telephone procedures.
3. Tour a local radio or television station.
4. Write and submit a news article for a local newspaper.
5. Write a letter applying for a job in an agribusiness.

DUTY AREA 4

INTRODUCING AGRICULTURAL MECHANICS TECHNOLOGY

COMPETENCY/TASK

4.1 Determine the importance of agricultural mechanics technology.

4.2 Identify basic laboratory safety procedures.

4.3 Describe new agricultural engineering technologies.

4.4 Identify and use basic hand tools for woodworking.

Application Examples

1. Develop a list of safety rules for the laboratory.
2. Identify hand tools for woodworking.
3. Construct a simple woodworking project.
4. Demonstrate the proper use of one hand tool.

DUTY AREA 5

INTRODUCING ECOLOGY AND CONSERVATION

COMPETENCY/TASK

5.1 Explain how organisms and the environment work together.

5.2 Identify conservation measures.

5.3 Identify the various types of natural resources.

5.4 Identify ecology and conservation concerns in the community.

5.5 Identify clean water needs of society.

5.6 Explain methods of conserving water.

5.7 Discuss home water conservation techniques.

5.8 Describe how agriculture and the environment are interrelated.

Application Examples

1. Apply conservation practices to an area around the school or in the community.
2. Identify ecology/conservation organizations in the community.
3. List the occupational titles for ecology/conservation occupations in the community.
4. Test a water sample.
5. Tour the water treatment plant in the community.
6. Interview a local soil conservationist; report to class information learned from the interview.
7. Construct a soil profile.

DUTY AREA 6

IDENTIFYING CAREER OPPORTUNITIES IN AGRICULTURE

COMPETENCY/TASK

6.1 Identify full-time career opportunities in agriculture in Virginia.

6.2 Identify part-time career opportunities in agriculture in Virginia.

6.3 Explain career opportunities in agribusiness.

6.4 Determine the educational requirements for certain agricultural occupations.

Application Examples

1. Invite guest speaker to the class.
2. Develop a list of local agricultural opportunities.
3. Visit a local agribusiness to observe operations.
4. Visit a local farm to observe farming practices.
5. Write a one-page description of a selected agricultural occupation.
6. Visit a local agricultural marketing operation.

AGRISCIENCE EXPLORATION 8003

GRADE 7 (18 weeks)

SUGGESTED DUTY AREAS

Duty Area 0	Becoming Oriented to Agriscience Exploration
Duty Area 1	Recognizing the Importance of Agriculture/Agriscience
Duty Area 2	Conserving Natural Resources
Duty Area 3	Exploring Research in Agriculture
Duty Area 4	Exploring Plant Science
Duty Area 5	Exploring Animal Science
Duty Area 6	Introducing Basic Laboratory Skills
Duty Area 7	Encouraging Personal Development

DUTY AREA 0

BECOMING ORIENTED TO AGRISCIENCE EXPLORATION

COMPETENCY/TASK

0.1 Explore ideas associated with agriculture.

0.2 Identify class rules and procedures.

Application Examples

1. Complete student survey.
2. Review class rules.
3. Tour agricultural education facilities.

DUTY AREA 1

RECOGNIZING THE IMPORTANCE OF AGRICULTURE/AGRISCIENCE

COMPETENCY/TASK

1.1 Explain the importance of agriculture to Virginia, the United States, and the world.

1.2 Describe the relationship of agriculture to other segments of society.

Application Examples

1. Identify agricultural statistics for Virignia.
2. List ten agricultural commodities produced in Virginia.
3. List ten agribusinesses located in Virginia.
4. List ten jobs in agriculture/agribusiness in the community.

DUTY AREA 2

CONSERVING NATURAL RESOURCES

COMPETENCY/TASK

2.1 Identify kinds of soil erosion.

2.2 Explain factors affecting soil erosion.

2.3 Explain the importance of conserving soils.

2.4 Discuss soil erosion control measures.

2.5 Explain soil and water conservation measures.

2.6 Review agricultural policies concerning air quality.

2.7 Give examples of how the air pollution control program works.

2.8 Explain the relationship of trees and wildlife.

2.9 Identify careers in soil and water conservation.

Application Examples

1. Invite a local soil conservationist to speak to the class.
2. Implement a conservation project.
3. Identify ground water sources in the community (wells, springs, etc.).
4. Take samples of water from a well and test.
5. Take a soil sample.
6. Design a project that demonstrates the effect of slope erosion.
7. Make a pie chart that illustrates the components of air.
8. Construct a model watershed.
9. Design a chart showing land use for the various land classifications.

DUTY AREA 3

EXPLORING RESEARCH IN AGRICULTURE

COMPETENCY/TASK

3.1 Explain the importance of agricultural research.

3.2 Identify agricultural research in animal science.

3.3 Identify agricultural research in plant science.

3.4 Identify research in agricultural engineering technology.

3.5 Explore career opportunities in agricultural research.

Application Examples

1. Conduct a simple research project.
   Example:
   Conduct a germination experiment with variables of moisture and temperature.
2. Tour an agricultural experiment station.
3. Utilize news media presentations on new technologies in agriculture (available from various commercial agriculture organizations).
4. Prepare and present an oral report on one recent agricultural research project.
5. Discuss the issues of pesticide residues on food in the United States.
6. Research a crop grown in your area. Discuss the major pests, and recommend practices to control these pests.

DUTY AREA 4

EXPLORING PLANT SCIENCE

COMPETENCY/TASK

4.1 Determine economic importance of agricultural crops.

4.2 Describe the photosynthesis process of plants.

4.3 Identify and explain methods of plant reproduction.

4.4 Demonstrate proper watering and fertilization of plants.

4.5 Identify and label plants.

4.6 Identify methods of planting or transplanting.

4.7 Explain the use of hydroponics in growing plants.

4.8 Discuss new technology in plant science.

4.9 Explain career opportunities in plant science.

Application Examples

1. Grow plants using hydroponics.
2. Propagate plants by stem cutting.
3. Germinate seeds.
4. Tour a local greenhouse to observe plant growth.
5. Identify ten plants grown locally.
6. Schedule plants to be grown in greenhouse or outdoor laboratory.
7. Construct a bulletin board display showing the cross section of a leaf; label the veins, cells, and leaf parts.
8. Conduct a plant and seed identification contest using agricultural grains, vegetable seed, and house plants.
9. Conduct a basic research project in the area of plant science.
10. Demonstrate plant tissue culture testing.
11. Evaluate a class of plants.
12. Identify Virginia forest trees.

DUTY AREA 5

EXPLORING ANIMAL SCIENCE

COMPETENCY/TASK

5.1 Determine the importance of animals to agriculture.

5.2 Explain the importance of animal evaluation.

5.3 Identify key scientific terms used in the animal industry.

5.4 Explore the meat animal industry.

5.5 Explore the pleasure and companion animal industry.

5.6 Discuss new technologies in animal science.

5.7 Discuss ethical concerns related to animal welfare.

5.8 Explore career opportunities in animal science.

Application Examples

1. Tour local farm to observe livestock common to area.
2. Tour local veterinarian or pet shop to observe small animals.
3. Evaluate a class of animals.
4. Invite local animal producers or a veterinarian to speak to class.
5. Conduct a livestock or small animal project.
6. Tour an agribusiness that serves the animal industry.
7. Conduct an animal identification quiz as a class project.
8. Conduct a class survey of the breeds of animals owned by students and their families.
9. Invite a person from the local SPCA to discuss animal care.
10. Identify animal products.

DUTY AREA 6

INTRODUCING BASIC LABORATORY SKILLS

COMPETENCY/TASK

6.1 Apply safety practices.

6.2 Identify types of metal.

6.3 Perform metal fabrication practices.

6.4 Read and interpret simple plans.

6.5 Identify and use basic hand tools for woodworking.

6.6 Maintain hand tools.

6.7 Select and use measuring devices.

6.8 Select and use wood fasteners.

6.9 Finish and preserve wood.

Application Examples

1. Demonstrate the proper use of a selected hand tool.
2. Develop a list of safety rules for the laboratory.
3. Identify hand tools used for woodworking.
4. Construct a simple woodworking project.
5. Sketch a simple woodworking project.
6. Identify and use wood fasteners.
7. Finish a wood project.
8. Perform the spark test on metal.
9. Demonstrate a metal fabrication skill.

DUTY AREA 7

ENCOURAGING PERSONAL DEVELOPMENT

COMPETENCY/TASK

7.1 Identify effective leadership traits.

7.2 Identify personal development needs.

7.3 Develop oral communication skills.

7.4 Develop written communication skills.

7.5 Develop an understanding of FFA.

7.6 Develop opportunities for leadership.

7.7 Develop social skills.

Application Examples

1. Participate in group discussions.
2. Participate in at least one FFA leadership activity.
3. Serve on one committee.
4. Observe a meeting of a local county organization to observe leadership skills.
5. Identify community leaders.
6. Prepare and present a three-minute talk on an agriscience topic.
7. Prepare a written report discussing ways you exercise leadership in your family, school, and community.
8. Conduct a local social activity.
   Examples:
      Cook-out
      Banquet

AGRISCIENCE AND TECHNOLOGY 8004

GRADE 8 (18 or 36 weeks)

SUGGESTED DUTY AREAS

Duty Area 0	Becoming Oriented to Agriscience Technology
Duty Area 1	Identifying New Technologies in Agriculture/Agriscience
Duty Area 2	Understanding International Agriculture
Duty Area 3	Understanding Agricultural Businesses
Duty Area 4	Using Microcomputers in Agriculture
Duty Area 5	Introducing Supervised Agricultural Experiences
Duty Area 6	Using Hand Tools and Agricultural Power Euqipment
Duty Area 7	Developing Leadership Skills
Duty Area 8	Experimenting in Agriculture

DUTY AREA 0

BECOMING ORIENTED TO AGRISCIENCE TECHNOLOGY

COMPETENCY/TASK

0.1 Identify Agricultural Education concepts.

0.2 Identify class rules and procedures.

Application Examples

1. Complete student survey.
2. Review class rules.
3. Tour agricultural education facilities.

DUTY AREA 1

IDENTIFYING NEW TECHNOLOGIES IN AGRICULTURE/AGRISCIENCE

COMPETENCY/TASK

1.1 Examine the application of computers to agricultural management.

1.2 Explore new technologies in animal science.

1.3 Explore new technologies in plant science.

1.4 Explore new technologies in agricultural engineering.

1.5 Explore new technologies in environmental areas.

1.6 Explore new strategies in agricultural marketing.

Application Examples

1. Use the computer to gather information.
2. Use the computer to demonstrate landscape design.
3. Visit an agricultural research station to observe new technologies in plant science.
4. List ten new technologies that have been introduced in agriculture during the past five years.
5. Present a class report on new technologies in one of the following areas:

   Animal Science
   Plant Science
   Environmental Areas
   Agricultural Marketing
   Agricultural Engineering.
6. Develop a list of agriscience jobs that involve computer applications.
7. Design, construct, and test a model pole barn structure for load capacity.
8. Demonstrate hydroponic production of vegetables.
9. Visit an aquaculture operation.
10. Discuss animal genetics.

DUTY AREA 2

UNDERSTANDING INTERNATIONAL AGRICULTURE

COMPETENCY/TASK

2.1 Define **exports.**

2.2 Define **imports.**

2.3 Define **tariffs.**

2.4 Explain the relationship of international trade to Virginia agriculture.

2.5 Identify factors that affect trade agreements.

2.6 Explore careers in international agriculture.

Application Examples

1. List four major U.S. agriculture exports.
2. List the major countries that import agricultural products from the U.S.
3. List four major Virginia agricultural exports.
4. List four agricultural commodities that are imported from other countries.
5. Tour a local grocery store to identify five domestic food items and five imported food items.
6. Compare prices of common domestic agricultural food items with foreign produced items of the same type.
7. Compare percent of income spent on food in the United States vs. other countries.
8. Discuss cultural differences in different countries.
9. Indicate on a map countries that import various United States agricultural products.

DUTY AREA 3

UNDERSTANDING AGRICULTURAL BUSINESSES

COMPETENCY/TASK

3.1 Identify the role of agribusiness in agriculture.

3.2 Discuss free enterprise and the economy.

3.3 Define entrepreneur.

3.4 Recognize personal potential as an entrepreneur.

3.5 Identify career opportunities in agribusiness.

3.6. Describe the role and function of an agribusiness manager.

Application Examples

1. Identify agricultural service occupations in the community.
2. Identify agricultural supply occupations in the community.
3. Tour local agribusiness in the community.
4. Discuss the nature of entrepreneurship.
5. Invite a local entrepreneur to talk to class about establishing a small business.
6. Invite a banker to discuss the procedure used in applying for a loan.
7. Develop a bulletin board display illustrating entrepreneurship opportunities in agribusiness.
8. Participate in at least one sales project.
9. Simulate an agricultural business to include designing, producing, and marketing a commodity.

DUTY AREA 4

USING MICROCOMPUTERS IN AGRICULTURE

COMPETENCY/TASK

4.1 Identify components of a computer system.

4.2 Define computer terms.

4.3 Explain the proper use of diskettes.

4.4 Use word processing software.

4.5 Identify the uses of computers in agriculture.

Application Examples

1. Write a short report using the word processor.
2. Format a diskette.
3. Power up a computer and access a computer program.
4. Participate in a FFA computer contest.
5. Develop a list of agriscience jobs that involve the use of computers.

DUTY AREA 5

INTRODUCING SUPERVISED AGRICULTURAL EXPERIENCES

COMPETENCY/TASK

5.1 Define **supervised agricultural experience program.**

5.2 Identify the various types of supervised agricultural experience programs.

5.3 Describe characteristics of a successful supervised agricultural experience program.

5.4 Select and plan an individual supervised agricultural experience program.

5.5 Relate supervised agricultural experience programs to FFA awards programs.

Application Examples

1. List examples of appropriate supervised agricultural experience programs.
2. Analyze a sample supervised agricultural experience program.
3. Visit an outstanding supervised agricultural experience program in the community.
4. Select individual enterprises, and plan individual supervised agricultural experience program.
5. Participate in chapter achievement award program.

DUTY AREA 6

USING HAND TOOLS AND AGRICULTURAL POWER EQUIPMENT

COMPETENCY/TASK

6.1 Explain, demonstrate, and practice safety practices.

6.2 Identify portable power equipment, hand tools, and accessories.

6.3 Demonstrate the proper use of portable power equipment, hand tools, and accessories.

6.4 Perform woodworking skills.

6.5 Explain basic principles of electricity.

6.6 Perform basic electrical wiring skills.

6.7 Cut, shape, and drill metal.

6.8 Explain the arc welding process.

6.9 Operate arc welding equipment.

6.10 Perform measuring skills.

6.11 Read, interpret and construct plans for a mechanics project.

6.12 Explain operation principles of four-stroke cycle engines.

Application Examples

1. Pass safety test on using power equipment.
2. Identify hand or portable power woodworking tools.
3. Identify hand or portable power metal working tools.
4. Complete an arc welding project.
5. Participate in an agricultural mechanics contest.
6. Demonstrate the proper use of one woodworking and one metal working tool.

continued

7. Construct a woodworking project.

   Examples: Flower Pot Stand
   Gun Rack
   Nail Box
   Stool
   Condiment Holder

8. Select a cold metal project .

   Examples: Template
   C-Clamp
   Metal Box
   Eye Bolt
   Feed Scoop

9. Identify small engine parts.

10. Complete a simple wiring exercise.

DUTY AREA 7

DEVELOPING LEADERSHIP SKILLS

COMPETENCY/TASK

7.1 Complete a personal development inventory.

7.2 Explain opportunities for leadership development through the FFA.

7.3 Use democratic principles in conducting an effective meeting.

7.4 Develop an understanding of the FFA.

Application Examples

1. List agribusiness leadership opportunities in the community.
2. Participate in chapter meeting.
3. Participate on a committee.
4. Participate in at least one FFA leadership activity.
5. Complete a personality self-rating scale.
6. Recite and explain the meaning of the FFA Creed.
7. Participate in school, community, or church leadership activities.

DUTY AREA 8

EXPERIMENTING IN AGRICULTURE

COMPETENCY/TASK

8.1 Identify the components of a research project.

8.2 Practice safety procedures in performing experiments.

8.3 Perform an agricultural experiment.

8.4 Evaluate the results of an experiment.

8.5 Develop experimental reporting skills.

Application Examples

1. Exhibit a project in an Agricultural Science Fair or school science fair.
2. Conduct an agricultural research project.
3. Use a practical experiment as a supervised agricultural experience program.
4. Tour an experimental station.

LANGUAGE ARTS, MATHEMATICS, AND SCIENCE STANDARDS OF LEARNING OBJECTIVES

The following section contains the Language Arts, Mathematics, and Science Standards of Learning (SOL) objectives for grades 6, 7, and 8. Each SOL objective is cross-referenced to the individual tasks listed in this guide.

Specific objectives that are incorporated in the teaching of an agriscience task are marked on the following matrices. The selection of objectives that have been marked was based on the application examples listed with each task. Undoubtedly, teachers will use additional instructional activities in teaching tasks in this document. Consequently, additional Standards of Learning objectives would be incorporated in their instruction. Teachers may want to adjust the following matrices to correspond to their instructional activities.

Matrices for Introduction to Agriscience 8002

(Grade 6)

COMPETENCY/TASK

GRADE 6 DUTY AREA 1: DESCRIBING AGRICULTURE LANGUAGE ARTS/ENGLISH/READING STANDARDS OF LEARNING GRADE 6	1.1 Define agriculture/agriscience.	1.2 Discuss impact of agriculture on world economy.	1.3 Identify key factors that have shaped agricultural industry in the U. S.	1.4 Describe interdependency of agriculture and other segments of society.	1.5 Identify research and development activities in agriculture.				
6.1 Give accurate multi-step oral directions.									
6.2 Compare and contrast ideas found in printed material.	•	•	•	•	•				
6.3 Participate in various prewriting activities.	•	•	•						
6.4 Proofread paragraphs written by himself or herself and by other students.		•	•						
6.5 Write a paragraph containing a main idea and several supporting details.		•	•						
6.6 Write a business letter using a standard format.									
6.7 Apply in writing the major conventions of spelling.									
6.8 Recognize the major elements of a story.									
6.9 Create brief narratives.									
6.10 Recognize the use of persuasive techniques.									
6.11 Use the card catalog to locate sources of information.		•	•						
6.12 Select and use appropriate reference sources in gathering information to answer specific questions.	•	•	•	•	•				
6.13 Use mass media to obtain information.		•							
6.14 Form complex sentences using the most common subordinating conjunctions.									
6.15 Understand that personal values and points of view influence what is said, heard, and read.			•						

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COMPETENCY/TASK

GRADE 6

DUTY AREA 2: INTRODUCING PLANT AND ANIMAL LIFE CYCLES

LANGUAGE ARTS/ENGLISH/READING STANDARDS OF LEARNING GRADE 6	2.1 Identify and explain functions of plant systems.	2.2 Identify basic requirements for plant growth and development.	2.3 Identify plants of economic importance to community.	2.4 Identify basic requirements for animal growth and development.	2.5 Identify careers in plant science.	2.6 Identify careers in animal science.			
6.1 Give accurate multi-step oral directions.	●			●					
6.2 Compare and contrast ideas found in printed material.	●	●	●	●	●	●			
6.3 Participate in various prewriting activities.									
6.4 Proofread paragraphs written by himself or herself and by other students.						●			
6.5 Write a paragraph containing a main idea and several supporting details.				●	●				
6.6 Write a business letter using a standard format.									
6.7 Apply in writing the major conventions of spelling.									
6.8 Recognize the major elements of a story.					●				
6.9 Create brief narratives.						●			
6.10 Recognize the use of persuasive techniques.					●	●			
6.11 Use the card catalog to locate sources of information.	●			●	●				
6.12 Select and use appropriate reference sources in gathering information to answer specific questions.	●	●	●	●	●	●			
6.13 Use mass media to obtain information.						●			
6.14 Form complex sentences using the most common subordinating conjunctions.						●			
6.15 Understand that personal values and points of view influence what is said, heard, and read.						●			

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COMPETENCY/TASK

GRADE 6

DUTY AREA 3: COMMUNICATING WITH OTHERS

LANGUAGE ARTS/ENGLISH/READING STANDARDS OF LEARNING GRADE 6	3.1 Discuss the importance of effective communication.	3.2 Participate in a group discussion.	3.3 Communicate on the telephone.	3.4 Communicate through letters.	3.5 Communicate through newspapers, radio, and T.V.				
6.1 Give accurate multi-step oral directions.			•		•				
6.2 Compare and contrast ideas found in printed material.	•	•	•	•	•				
6.3 Participate in various prewriting activities.	•			•	•				
6.4 Proofread paragraphs written by himself or herself and by other students.	•			•	•				
6.5 Write a paragraph containing a main idea and several supporting details.	•			•	•				
6.6 Write a business letter using a standard format.	•			•	•				
6.7 Apply in writing the major conventions of spelling.	•			•	•				
6.8 Recognize the major elements of a story.	•	•	•		•				
6.9 Create brief narratives.									
6.10 Recognize the use of persuasive techniques.	•	•	•	•	•				
6.11 Use the card catalog to locate sources of information.	•								
6.12 Select and use appropriate reference sources in gathering information to answer specific questions.	•	•	•	•	•				
6.13 Use mass media to obtain information.	•		•	•	•				
6.14 Form complex sentences using the most common subordinating conjunctions.	•			•					
6.15 Understand that personal values and points of view influence what is said, heard, and read.	•	•	•						

COMPETENCY/TASK

GRADE 6

DUTY AREA 4: INTRODUCING AGRICULTURAL MECHANICS TECHNOLOGY

LANGUAGE ARTS/ENGLISH/READING STANDARDS OF LEARNING GRADE 6	4.1 Determine the importance of agricultural mechanics technology.	4.2 Identify basic laboratory safety procedures.	4.3 Describe new agricultural engineering technologies.	4.4 Identify and use basic hand tools for woodworking.					
6.1 Give accurate multi-step oral directions.									
6.2 Compare and contrast ideas found in printed material.	●	●	●	●					
6.3 Participate in various prewriting activities.									
6.4 Proofread paragraphs written by himself or herself and by other students.									
6.5 Write a paragraph containing a main idea and several supporting details.			●						
6.6 Write a business letter using a standard format.									
6.7 Apply in writing the major conventions of spelling.									
6.8 Recognize the major elements of a story.									
6.9 Create brief narratives.			●						
6.10 Recognize the use of persuasive techniques.									
6.11 Use the card catalog to locate sources of information.									
6.12 Select and use appropriate reference sources in gathering information to answer specific questions.	●	●	●	●					
6.13 Use mass media to obtain information.									
6.14 Form complex sentences using the most common subordinating conjunctions.									
6.15 Understand that personal values and points of view influence what is said, heard, and read.									

GRADE 6

DUTY AREA 5: INTRODUCING ECOLOGY AND CONSERVATION

COMPETENCY/TASK

LANGUAGE ARTS/ENGLISH/READING STANDARDS OF LEARNING GRADE 6	5.1 Explain how organisms and the environment work together.	5.2 Identify conservation measures.	5.3 Identify various types of natural resources.	5.4 Identify ecology and conservation concerns in the community.	5.5 Identify clean water needs of society.	5.6 Explain methods of conserving water.	5.7 Discuss home water conservation techniques.	5.8 Describe how agriculture and the environment are interrelated.	
6.1 Give accurate multi-step oral directions.						●	●		
6.2 Compare and contrast ideas found in printed material.	●	●	●	●	●	●	●		
6.3 Participate in various prewriting activities.									
6.4 Proofread paragraphs written by himself or herself and by other students.						●		●	
6.5 Write a paragraph containing a main idea and several supporting details.		●				●		●	
6.6 Write a business letter using a standard format.									
6.7 Apply in writing the major conventions of spelling.									
6.8 Recognize the major elements of a story.	●								
6.9 Create brief narratives.		●							
6.10 Recognize the use of persuasive techniques.							●	●	
6.11 Use the card catalog to locate sources of information.	●	●						●	
6.12 Select and use appropriate reference sources in gathering information to answer specific questions.	●	●	●	●	●	●	●	●	
6.13 Use mass media to obtain information.	●	●	●	●	●	●	●		
6.14 Form complex sentences using the most common subordinating conjunctions.									
6.15 Understand that personal values and points of view influence what is said, heard, and read.						●	●		

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COMPETENCY/TASK

GRADE 6

DUTY AREA 6: IDENTIFYING CAREER OPPORTUNITIES IN AGRICULTURE

LANGUAGE ARTS/ENGLISH/READING STANDARDS OF LEARNING GRADE 6	6.1 Identify full-time career opportunities in agriculture in Virginia.	6.2 Identify part-time career opportunities in agriculture in Virginia.	6.3 Explain career opportunities in agribusiness.	6.4 Determine educational requirements for certain agricultural occupations.					
6.1 Give accurate multi-step oral directions.									
6.2 Compare and contrast ideas found in printed material.	●	●	●	●					
6.3 Participate in various prewriting activities.									
6.4 Proofread paragraphs written by himself or herself and by other students.	●			●					
6.5 Write a paragraph containing a main idea and several supporting details.	●	●	●	●					
6.6 Write a business letter using a standard format.	●		●						
6.7 Apply in writing the major conventions of spelling.				●					
6.8 Recognize the major elements of a story.									
6.9 Create brief narratives.	●	●							
6.10 Recognize the use of persuasive techniques.									
6.11 Use the card catalog to locate sources of information.				●					
6.12 Select and use appropriate reference sources in gathering information to answer specific questions.	●	●	●	●					
6.13 Use mass media to obtain information.									
6.14 Form complex sentences using the most common subordinating conjunctions.									
6.15 Understand that personal values and points of view influence what is said, heard, and read.	●	●							

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COMPETENCY/TASK

GRADE 6

DUTY AREA 1: DESCRIBING AGRICULTURE

MATH STANDARDS OF LEARNING GRADE 6	1.1 Define agriculture/agriscience.	1.2 Discuss impact of agriculture on world economy.	1.3 Identify key factors that have shaped agricultural industry in the U. S.	1.4 Describe interdependency of agriculture and other segments of society.	1.5 Identify research and development activities in agriculture.				
6.1 Identify the place value of each digit in a nine digit numeral.									
6.2 Round a given whole number, 99,999 or less, to the nearest ten, hundred, thousand, or ten-thousand.									
6.3 Find the sum of a set having three or fewer whole numbers each 99,999 or less.									
6.4 Find the difference between two whole numbers, each 99,999 or less.									
6.5 Find the product of two whole numbers when one factor is 99 or less and the other factor is 9,999 or less.									
6.6 Find the quotient of two whole numbers given a dividend of four digits or less and a divisor of two digits or less.									
6.7 Compare the numerical values of two decimals through thousandths using the sumbols >, <, or =.									
6.8 Add with decimals (two addends) through thousandths.									
6.9 Subtract with decimals through thousandths.									
6.10 Find the product of two numbers expressed as decimals such that the product contains no more than three decimal places.									
6.11 Divide a number expressed in decimal form, through thousandths, by a whole number less than 20.									
6.12 Add with fractions and mixed numerals where the sum of the fractional parts is less than one.									
6.13 Subtract with fractions and mixed numerals, no regrouping.									
6.14 Multiply with simple fractions having denominators of 10 or less.									
6.15 Make conversions within the U.S. customary system.									
6.16 Identify the relationships among metric units denoted by the prefixes kilo, centi, and milli.									
6.17 Add and subtract measurements without regrouping of measurement units.									
6.18 Find the perimeter of a square and a rectangle using addition.									
6.19 Determine the number of square units in a rectangular region, given an appropriate drawing									
6.20 Given a set of ordered pairs of whole numbers, locate the points in a coordinate plane.									
6.21 Solve word problems requiring the use of addition, subtraction, multiplication, and division of whole numbers.									
6.22 Solve word problems requiring the use of addition, subtraction, multiplication, and division of fractional numbers.									
6.23 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

COMPETENCY/TASK

GRADE 6

DUTY AREA 2: INTRODUCING PLANT AND ANIMAL LIFE CYCLES

MATH STANDARDS OF LEARNING GRADE 6		2.1 Identify and explain functions of plant systems.	2.2 Identify basic requirements for plant growth and development.	2.3 Identify plants of economic importance to community.	2.4 Identify basic requirements for animal growth and development.	2.5 Identify careers in plant science.	2.6 Identify careers in animal science.			
6.1	Identify the place value of each digit in a nine digit numeral.									
6.2	Round a given whole number, 99,999 or less, to the nearest ten, hundred, thousand, or ten-thousand.									
6.3	Find the sum of a set having three or fewer whole numbers each 99,999 or less.									
6.4	Find the difference between two whole numbers, each 99,999 or less.									
6.5	Find the product of two whole numbers when one factor is 99 or less and the other factor is 9,999 or less.									
6.6	Find the quotient of two whole numbers given a dividend of four digits or less and a divisor of two digits or less.									
6.7	Compare the numerical values of two decimals through thousandths using the sumbols >, <, or =.									
6.8	Add with decimals (two addends) through thousandths.						●			
6.9	Subtract with decimals through thousandths.						●			
6.10	Find the product of two numbers expressed as decimals such that the product contains no more than three decimal places.									
6.11	Divide a number expressed in decimal form, through thousandths, by a whole number less than 20.									
6.12	Add with fractions and mixed numerals where the sum of the fractional parts is less than one.									
6.13	Subtract with fractions and mixed numerals, no regrouping.									
6.14	Multiply with simple fractions having denominators of 10 or less.									
6.15	Make conversions within the U.S. customary system.									
6.16	Identify the relationships among metric units denoted by the prefixes kilo, centi, and milli.									
6.17	Add and subtract measurements without regrouping of measurement units.									
6.18	Find the perimeter of a square and a rectangle using addition.									
6.19	Determine the number of square units in a rectangular region, given an appropriate drawing									
6.20	Given a set of ordered pairs of whole numbers, locate the points in a coordinate plane.									
6.21	Solve word problems requiring the use of addition, subtraction, multiplication, and division of whole numbers.									
6.22	Solve word problems requiring the use of addition, subtraction, multiplication, and division of fractional numbers.									
6.23	Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

COMPETENCY/TASK

GRADE 6

DUTY AREA 3: COMMUNICATING WITH OTHERS

MATH STANDARDS OF LEARNING GRADE 6	3.1 Discuss the importance of effective communication.	3.2 Participate in a group discussion.	3.3 Communicate on the telephone.	3.4 Communicate through letters.	3.5 Communicate through newspapers, radio, and T.V.				
6.1 Identify the place value of each digit in a nine digit numeral.									
6.2 Round a given whole number, 99,999 or less, to the nearest ten, hundred, thousand, or ten-thousand.									
6.3 Find the sum of a set having three or fewer whole numbers each 99,999 or less.									
6.4 Find the difference between two whole numbers, each 99,999 or less.									
6.5 Find the product of two whole numbers when one factor is 99 or less and the other factor is 9,999 or less.									
6.6 Find the quotient of two whole numbers given a dividend of four digits or less and a divisor of two digits or less.									
6.7 Compare the numerical values of two decimals through thousandths using the sumbols >, <, or =.									
6.8 Add with decimals (two addends) through thousandths.									
6.9 Subtract with decimals through thousandths.									
6.10 Find the product of two numbers expressed as decimals such that the product contains no more than three decimal places.									
6.11 Divide a number expressed in decimal form, through thousandths, by a whole number less than 20.									
6.12 Add with fractions and mixed numerals where the sum of the fractional parts is less than one.									
6.13 Subtract with fractions and mixed numerals, no regrouping.									
6.14 Multiply with simple fractions having denominators of 10 or less.									
6.15 Make conversions within the U.S. customary system.									
6.16 Identify the relationships among metric units denoted by the prefixes kilo, centi, and milli.									
6.17 Add and subtract measurements without regrouping of measurement units.									
6.18 Find the perimeter of a square and a rectangle using addition.									
6.19 Determine the number of square units in a rectangular region, given an appropriate drawing.									
6.20 Given a set of ordered pairs of whole numbers, locate the points in a coordinate plane.									
6.21 Solve word problems requiring the use of addition, subtraction, multiplication, and division of whole numbers.									
6.22 Solve word problems requiring the use of addition, subtraction, multiplication, and division of fractional numbers.									
6.23 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

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COMPETENCY/TASK

GRADE 6

DUTY AREA 4: INTRODUCING AGRICULTURAL MECHANICS TECHNOLOGY

MATH STANDARDS OF LEARNING GRADE 6	4.1 Determine the importance of agricultural mechanics technology.	4.2 Identify basic laboratory safety procedures.	4.3 Describe new agricultural engineering technologies.	4.4 Identify and use basic hand tools for woodworking.					
6.1 Identify the place value of each digit in a nine digit numeral.									
6.2 Round a given whole number, 99,999 or less, to the nearest ten, hundred, thousand, or ten-thousand.									
6.3 Find the sum of a set having three or fewer whole numbers each 99,999 or less.									
6.4 Find the difference between two whole numbers, each 99,999 or less.									
6.5 Find the product of two whole numbers when one factor is 99 or less and the other factor is 9,999 or less.									
6.6 Find the quotient of two whole numbers given a dividend of four digits or less and a divisor of two digits or less.									
6.7 Compare the numerical values of two decimals through thousandths using the sumbols >, <, or =.									
6.8 Add with decimals (two addends) through thousandths.									
6.9 Subtract with decimals through thousandths.									
6.10 Find the product of two numbers expressed as decimals such that the product contains no more than three decimal places.									
6.11 Divide a number expressed in decimal form, through thousandths, by a whole number less than 20.									
6.12 Add with fractions and mixed numerals where the sum of the fractional parts is less than one.									
6.13 Subtract with fractions and mixed numerals, no regrouping.									
6.14 Multiply with simple fractions having denominators of 10 or less.									
6.15 Make conversions within the U.S. customary system.									
6.16 Identify the relationships among metric units denoted by the prefixes kilo, centi, and milli.									
6.17 Add and subtract measurements without regrouping of measurement units.									
6.18 Find the perimeter of a square and a rectangle using addition.									
6.19 Determine the number of square units in a rectangular region, given an appropriate drawing.									
6.20 Given a set of ordered pairs of whole numbers, locate the points in a coordinate plane.									
6.21 Solve word problems requiring the use of addition, subtraction, multiplication, and division of whole numbers.									
6.22 Solve word problems requiring the use of addition, subtraction, multiplication, and division of fractional numbers.									
6.23 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

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COMPETENCY/TASK

GRADE 6

DUTY AREA 5: INTRODUCING ECOLOGY AND CONSERVATION

MATH STANDARDS OF LEARNING GRADE 6		5.1 Explain how organisms and the environment work together.	5.2 Identify conservation measures.	5.3 Identify various types of natural resources.	5.4 Identify ecology and conservation concerns in the community.	5.5 Identify clean water needs of society.	5.6 Explain methods of conserving water.	5.7 Discuss home water conservation techniques.	5.8 Describe how agriculture and the environment are interrelated.	
6.1	Identify the place value of each digit in a nine digit numeral.									
6.2	Round a given whole number, 99,999 or less, to the nearest ten, hundred, thousand, or ten-thousand.									
6.3	Find the sum of a set having three or fewer whole numbers each 99,999 or less.									
6.4	Find the difference between two whole numbers, each 99,999 or less.									
6.5	Find the product of two whole numbers when one factor is 99 or less and the other factor is 9,999 or less.									
6.6	Find the quotient of two whole numbers given a dividend of four digits or less and a divisor of two digits or less.									
6.7	Compare the numerical values of two decimals through thousandths using the sumbols >, <, or =.									
6.8	Add with decimals (two addends) through thousandths.									
6.9	Subtract with decimals through thousandths.									
6.10	Find the product of two numbers expressed as decimals such that the product contains no more than three decimal places.									
6.11	Divide a number expressed in decimal form, through thousandths, by a whole number less than 20.									
6.12	Add with fractions and mixed numerals where the sum of the fractional parts is less than one.									
6.13	Subtract with fractions and mixed numerals, no regrouping.									
6.14	Multiply with simple fractions having denominators of 10 or less.									
6.15	Make conversions within the U.S. customary system.									
6.16	Identify the relationships among metric units denoted by the prefixes kilo, centi, and milli.									
6.17	Add and subtract measurements without regrouping of measurement units.									
6.18	Find the perimeter of a square and a rectangle using addition.									
6.19	Determine the number of square units in a rectangular region, given an appropriate drawing.									
6.20	Given a set of ordered pairs of whole numbers, locate the points in a coordinate plane.									
6.21	Solve word problems requiring the use of addition, subtraction, multiplication, and division of whole numbers.									
6.22	Solve word problems requiring the use of addition, subtraction, multiplication, and division of fractional numbers.									
6.23	Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

GRADE 6

DUTY AREA 6: IDENTIFYING CAREER OPPORTUNITIES IN AGRICULTURE

MATH STANDARDS OF LEARNING GRADE 6	COMPETENCY/TASK								
	6.1 Identify full-time career opportunities in agriculture in Virginia.	6.2 Identify part-time career opportunities in agriculture in Virginia.	6.3 Explain career opportunities in agribusiness.	6.4 Determine educational requirements for certain agricultural occupations.					
6.1 Identify the place value of each digit in a nine digit numeral.									
6.2 Round a given whole number, 99,999 or less, to the nearest ten, hundred, thousand, or ten-thousand.									
6.3 Find the sum of a set having three or fewer whole numbers each 99,999 or less.									
6.4 Find the difference between two whole numbers, each 99,999 or less.									
6.5 Find the product of two whole numbers when one factor is 99 or less and the other factor is 9,999 or less.									
6.6 Find the quotient of two whole numbers given a dividend of four digits or less and a divisor of two digits or less.									
6.7 Compare the numerical values of two decimals through thousandths using the sumbols >, <, or =.									
6.8 Add with decimals (two addends) through thousandths.									
6.9 Subtract with decimals through thousandths.									
6.10 Find the product of two numbers expressed as decimals such that the product contains no more than three decimal places.									
6.11 Divide a number expressed in decimal form, through thousandths, by a whole number less than 20.									
6.12 Add with fractions and mixed numerals where the sum of the fractional parts is less than one.									
6.13 Subtract with fractions and mixed numerals, no regrouping.									
6.14 Multiply with simple fractions having denominators of 10 or less.									
6.15 Make conversions within the U.S. customary system.									
6.16 Identify the relationships among metric units denoted by the prefixes kilo, centi, and milli.									
6.17 Add and subtract measurements without regrouping of measurement units.									
6.18 Find the perimeter of a square and a rectangle using addition.									
6.19 Determine the number of square units in a rectangular region, given an appropriate drawing.									
6.20 Given a set of ordered pairs of whole numbers, locate the points in a coordinate plane.									
6.21 Solve word problems requiring the use of addition, subtraction, multiplication, and division of whole numbers.									
6.22 Solve word problems requiring the use of addition, subtraction, multiplication, and division of fractional numbers.									
6.23 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

COMPETENCY/TASK

GRADE 6

DUTY AREA 1: DESCRIBING AGRICULTURE

SCIENCE STANDARDS OF LEARNING GRADE 6	1.1 Define agriculture/agriscience.	1.2 Discuss impact of agriculture on world economy.	1.3 Identify key factors that have shaped agricultural industry in the U. S.	1.4 Describe interdependency of agriculture and other segments of society.	1.5 Identify research and development activities in agriculture.				
6.1 Demonstrate safety procedures in the use of laboratory equipment and materials, while working individually and in groups.									
6.2 Use process skills as a basis for solving problems, answering questions, and providing explanations.					●				
6.3 Use appropriate materials, tools, and units of measurement in conducting scientific observations.									
6.4 Use various resources to explore topics of personal interest and career opportunities in areas of science.									
6.5 Observe changes and classify them as chemical or physical.									
6.6 Use observation and experimentation to determine chemical and physical properties of substances.									
6.7 Determine the relationship between changes in temperature and the states of matter for given substances.									
6.8 Construct models of or diagrams for atoms.									
6.9 Determine electrical energy consumption using common units.									
6.10 Observe materials and classify them as mixtures or nonmixtures (elements and compounds).									
6.11 Define kinetic and potential energy and then state examples of each.									
6.12 Classify the forms of energy involved in energy transformations.									
6.13 Identify the life processes of organisms.									
6.14 Describe the dependence of organisms upon non-living things.									
6.15 Describe the differences and similarities between plants and animals.									
6.16 Describe the interaction and interdependence of plants and animals.									
6.17 Compare and contrast natural cycles.									
6.18 Describe the movements of the earth, sun, and moon.									
6.19 Describe the gravitational effects of the sun and moon upon the earth's environment.									
6.20 Explain positive and negative effects of human interaction with the environment.									
6.21 Describe the uses and conservation of renewable and nonrenewable resources.				●					
6.22 Explain the relationship of the sun to most forms of energy on earth.									
6.23 Describe the basic relationship between electricity and magnetism.									
6.24 Identify and describe cellular components.									

COMPETENCY/TASK

GRADE 6

DUTY AREA 2: INTRODUCING PLANT AND ANIMAL LIFE CYCLES

SCIENCE STANDARDS OF LEARNING GRADE 6	2.1 Identify and explain functions of plant systems.	2.2 Identify basic requirements for plant growth and development.	2.3 Identify plants of economic importance to community.	2.4 Identify basic requirements for animal growth and development.	2.5 Identify careers in plant science.	2.6 Identify careers in animal science.			
6.1 Demonstrate safety procedures in the use of laboratory equipment and materials, while working individually and in groups.									
6.2 Use process skills as a basis for solving problems, answering questions, and providing explanations.	●	●		●					
6.3 Use appropriate materials, tools, and units of measurement in conducting scientific observations.									
6.4 Use various resources to explore topics of personal interest and career opportunities in areas of science.					●	●			
6.5 Observe changes and classify them as chemical or physical.									
6.6 Use observation and experimentation to determine chemical and physical properties of substances.	●								
6.7 Determine the relationship between changes in temperature and the states of matter for given substances.									
6.8 Construct models of or diagrams for atoms.	●								
6.9 Determine electrical energy consumption using common units.									
6.10 Observe materials and classify them as mixtures or nonmixtures (elements and compounds).									
6.11 Define kinetic and potential energy and then state examples of each.									
6.12 Classify the forms of energy involved in energy transformations.									
6.13 Identify the life processes of organisms.	●	●	●	●					
6.14 Describe the dependence of organisms upon non-living things.	●	●	●	●					
6.15 Describe the differences and similarities between plants and animals.	●	●	●	●					
6.16 Describe the interaction and interdependence of plants and animals.	●	●	●	●	●				
6.17 Compare and contrast natural cycles.	●	●	●	●					
6.18 Describe the movements of the earth, sun, and moon.									
6.19 Describe the gravitational effects of the sun and moon upon the earth's environment.									
6.20 Explain positive and negative effects of human interaction with the environment.									
6.21 Describe the uses and conservation of renewable and nonrenewable resources.									
6.22 Explain the relationship of the sun to most forms of energy on earth.									
6.23 Describe the basic relationship between electricity and magnetism.									
6.24 Identify and describe cellular components.									

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COMPETENCY/TASK

GRADE 6

DUTY AREA 3: COMMUNICATING WITH OTHERS

SCIENCE STANDARDS OF LEARNING GRADE 6		3.1 Discuss the importance of effective communication.	3.2 Participate in a group discussion.	3.3 Communicate on the telephone.	3.4 Communicate through letters.	3.5 Communicate through newspapers, radio, and T.V.				
6.1	Demonstrate safety procedures in the use of laboratory equipment and materials, while working individually and in groups.		●							
6.2	Use process skills as a basis for solving problems, answering questions, and providing explanations.		●							
6.3	Use appropriate materials, tools, and units of measurement in conducting scientific observations.									
6.4	Use various resources to explore topics of personal interest and career opportunities in areas of science.									
6.5	Observe changes and classify them as chemical or physical.									
6.6	Use observation and experimentation to determine chemical and physical properties of substances.									
6.7	Determine the relationship between changes in temperature and the states of matter for given substances.									
6.8	Construct models of or diagrams for atoms.									
6.9	Determine electrical energy consumption using common units.									
6.10	Observe materials and classify them as mixtures or nonmixtures (elements and compounds).									
6.11	Define kinetic and potential energy and then state examples of each.									
6.12	Classify the forms of energy involved in energy transformations.									
6.13	Identify the life processes of organisms.									
6.14	Describe the dependence of organisms upon non-living things.									
6.15	Describe the differences and similarities between plants and animals.									
6.16	Describe the interaction and interdependence of plants and animals.									
6.17	Compare and contrast natural cycles.									
6.18	Describe the movements of the earth, sun, and moon.									
6.19	Describe the gravitational effects of the sun and moon upon the earth's environment.									
6.20	Explain positive and negative effects of human interaction with the environment.									
6.21	Describe the uses and conservation of renewable and nonrenewable resources.									
6.22	Explain the relationship of the sun to most forms of energy on earth.									
6.23	Describe the basic relationship between electricity and magnetism.									
6.24	Identify and describe cellular components.									

GRADE 6

DUTY AREA 4: INTRODUCING AGRICULTURAL MECHANICS TECHNOLOGY

		COMPETENCY/TASK								
SCIENCE STANDARDS OF LEARNING GRADE 6		4.1 Determine the importance of agricultural mechanics technology.	4.2 Identify basic laboratory safety procedures.	4.3 Describe new agricultural engineering technologies.	4.4 Identify and use basic hand tools for woodworking.					
6.1	Demonstrate safety procedures in the use of laboratory equipment and materials, while working individually and in groups.	●	●		●					
6.2	Use process skills as a basis for solving problems, answering questions, and providing explanations.			●						
6.3	Use appropriate materials, tools, and units of measurement in conducting scientific observations.	●	●		●					
6.4	Use various resources to explore topics of personal interest and career opportunities in areas of science.	●		●						
6.5	Observe changes and classify them as chemical or physical.									
6.6	Use observation and experimentation to determine chemical and physical properties of substances.									
6.7	Determine the relationship between changes in temperature and the states of matter for given substances.									
6.8	Construct models of or diagrams for atoms.									
6.9	Determine electrical energy consumption using common units.									
6.10	Observe materials and classify them as mixtures or nonmixtures (elements and compounds).									
6.11	Define kinetic and potential energy and then state examples of each.									
6.12	Classify the forms of energy involved in energy transformations.									
6.13	Identify the life processes of organisms.									
6.14	Describe the dependence of organisms upon non-living things.									
6.15	Describe the differences and similarities between plants and animals.									
6.16	Describe the interaction and interdependence of plants and animals.									
6.17	Compare and contrast natural cycles.									
6.18	Describe the movements of the earth, sun, and moon.									
6.19	Describe the gravitational effects of the sun and moon upon the earth's environment.									
6.20	Explain positive and negative effects of human interaction with the environment.									
6.21	Describe the uses and conservation of renewable and nonrenewable resources.									
6.22	Explain the relationship of the sun to most forms of energy on earth.									
6.23	Describe the basic relationship between electricity and magnetism.									
6.24	Identify and describe cellular components.									

COMPETENCY/TASK

GRADE 6

DUTY AREA 5: INTRODUCING ECOLOGY AND CONSERVATION

SCIENCE STANDARDS OF LEARNING GRADE 6

		5.1 Explain how organisms and the environment work together.	5.2 Identify conservation measures.	5.3 Identify various types of natural resources.	5.4 Identify ecology and conservation concerns in the community.	5.5 Identify clean water needs of society.	5.6 Explain methods of conserving water.	5.7 Discuss home water conservation techniques.	5.8 Describe how agriculture and the environment are interrelated.	
6.1	Demonstrate safety procedures in the use of laboratory equipment and materials, while working individually and in groups.									
6.2	Use process skills as a basis for solving problems, answering questions, and providing explanations.	•	•		•	•				
6.3	Use appropriate materials, tools, and units of measurement in conducting scientific observations.						•		•	
6.4	Use various resources to explore topics of personal interest and career opportunities in areas of science.				•				•	
6.5	Observe changes and classify them as chemical or physical.									
6.6	Use observation and experimentation to determine chemical and physical properties of substances.									
6.7	Determine the relationship between changes in temperature and the states of matter for given substances.									
6.8	Construct models of or diagrams for atoms.									
6.9	Determine electrical energy consumption using common units.									
6.10	Observe materials and classify them as mixtures or nonmixtures (elements and compounds).									
6.11	Define kinetic and potential energy and then state examples of each.									
6.12	Classify the forms of energy involved in energy transformations.									
6.13	Identify the life processes of organisms.	•		•						
6.14	Describe the dependence of organisms upon non-living things.	•								
6.15	Describe the differences and similarities between plants and animals.	•								
6.16	Describe the interaction and interdependence of plants and animals.									
6.17	Compare and contrast natural cycles.	•								
6.18	Describe the movements of the earth, sun, and moon.									
6.19	Describe the gravitational effects of the sun and moon upon the earth's environment.									
6.20	Explain positive and negative effects of human interaction with the environment.	•	•	•	•	•	•	•	•	
6.21	Describe the uses and conservation of renewable and nonrenewable resources.	•	•	•	•	•	•	•	•	
6.22	Explain the relationship of the sun to most forms of energy on earth.									
6.23	Describe the basic relationship between electricity and magnetism.									
6.24	Identify and describe cellular components.									

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COMPETENCY/TASK

GRADE 6

DUTY AREA 6: IDENTIFYING CAREER OPPORTUNITIES IN AGRICULTURE

SCIENCE STANDARDS OF LEARNING GRADE 6	6.1 Identify full-time career opportunities in agriculture in Virginia.	6.2 Identify part-time career opportunities in agriculture in Virginia.	6.3 Explain career opportunities in agribusiness.	6.4 Determine educational requirements for certain agricultural occupations.					
6.1 Demonstrate safety procedures in the use of laboratory equipment and materials, while working individually and in groups.									
6.2 Use process skills as a basis for solving problems, answering questions, and providing explanations.									
6.3 Use appropriate materials, tools, and units of measurement in conducting scientific observations.									
6.4 Use various resources to explore topics of personal interest and career opportunities in areas of science.	●	●	●	●					
6.5 Observe changes and classify them as chemical or physical.									
6.6 Use observation and experimentation to determine chemical and physical properties of substances.									
6.7 Determine the relationship between changes in temperature and the states of matter for given substances.									
6.8 Construct models of or diagrams for atoms.									
6.9 Determine electrical energy consumption using common units.									
6.10 Observe materials and classify them as mixtures or nonmixtures (elements and compounds).									
6.11 Define kinetic and potential energy and then state examples of each.									
6.12 Classify the forms of energy involved in energy transformations.									
6.13 Identify the life processes of organisms.									
6.14 Describe the dependence of organisms upon non-living things.									
6.15 Describe the differences and similarities between plants and animals.									
6.16 Describe the interaction and interdependence of plants and animals.									
6.17 Compare and contrast natural cycles.									
6.18 Describe the movements of the earth, sun, and moon.									
6.19 Describe the gravitational effects of the sun and moon upon the earth's environment.									
6.20 Explain positive and negative effects of human interaction with the environment.									
6.21 Describe the uses and conservation of renewable and nonrenewable resources.									
6.22 Explain the relationship of the sun to most forms of energy on earth.									
6.23 Describe the basic relationship between electricity and magnetism.									
6.24 Identify and describe cellular components.									

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Matrices for Agriscience Exploration 8003

(Grade 7)

GRADE 7

DUTY AREA 1: RECOGNIZING THE IMPORTANCE OF AGRICULTURE/ AGRISCIENCE

		COMPETENCY/TASK								
LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7		1.1 Explain the importance of agriculture to Virginia, the United States, and to the world.	1.2 Describe the relationship of agriculture to other segments of society.							
7.1	Use interpersonal communication skills.	•								
7.2	Adjust reading rate according to purpose and the difficulty of the material.									
7.3	Form concepts based on information or ideas encountered in reading.									
7.4	Acquire information from materials which pertain to survival.		•							
7.5	Expand range of interests through wide reading.		•							
7.6	Express himself or herself in writing using forms of his or her own choice.		•							
7.7	Develop a paragraph using a prewriting, writing, and revising process.	•	•							
7.8	Perceive the relationship between vicarious experiences in literature and direct experiences.									
7.9	Enlarge speaking, reading, and writing vocabulary.	•	•							
7.10	Paraphrase information from written and oral materials.	•	•							
7.11	Take notes from written, oral, or audio-visual materials.	•	•							
7.12	Recognize the function of words within sentences.	•	•							

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COMPETENCY/TASK

GRADE 7

DUTY AREA 2: CONSERVING NATURAL RESOURCES

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7	2.1 Identify kinds of soil erosion.	2.2 Explain factors affecting soil erosion.	2.3 Explain the importance of conserving soils.	2.4 Discuss soil erosion control measures.	2.5 Explain soil and water conservation measures.	2.6 Review agricultural policies concerning air quality.	2.7 Give examples of how the air pollution control program works.	2.8 Explain the relationship of trees and wildlife.	2.9 Identify careers in soil and water conservation.
7.1 Use interpersonal communication skills.	•	•		•			•		
7.2 Adjust reading rate according to purpose and the difficulty of the material.								•	
7.3 Form concepts based on information or ideas encountered in reading.									
7.4 Acquire information from materials which pertain to survival.									
7.5 Expand range of interests through wide reading.		•			•		•	•	
7.6 Express himself or herself in writing using forms of his or her own choice.								•	
7.7 Develop a paragraph using a prewriting, writing, and revising process.								•	
7.8 Perceive the relationship between vicarious experiences in literature and direct experiences.									
7.9 Enlarge speaking, reading, and writing vocabulary.	•	•	•	•	•	•	•	•	•
7.10 Paraphrase information from written and oral materials.	•	•	•	•	•	•	•	•	•
7.11 Take notes from written, oral, or audio-visual materials.	•	•	•	•	•	•	•	•	•
7.12 Recognize the function of words within sentences.								•	

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GRADE 7

DUTY AREA 3: EXPLORING RESEARCH IN AGRICULTURE

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7		COMPETENCY/TASK								
		3.1 Explain the impact of agricultural research.	3.2 Identify agricultural research in animal science.	3.3 Identify agricultural research in plant science.	3.4 Identify research in agricultural engineering technology.	3.5 Explore career opportunities in agricultural research.				
7.1	Use interpersonal communication skills.	●								
7.2	Adjust reading rate according to purpose and the difficulty of the material.									
7.3	Form concepts based on information or ideas encountered in reading.					●				
7.4	Acquire information from materials which pertain to survival.	●								
7.5	Expand range of interests through wide reading.	●	●	●	●					
7.6	Express himself or herself in writing using forms of his or her own choice.									
7.7	Develop a paragraph using a prewriting, writing, and revising process.	●				●				
7.8	Perceive the relationship between vicarious experiences in literature and direct experiences.									
7.9	Enlarge speaking, reading, and writing vocabulary.	●	●	●						
7.10	Paraphrase information from written and oral materials.	●	●	●	●					
7.11	Take notes from written, oral, or audio-visual materials.	●	●	●	●					
7.12	Recognize the function of words within sentences.	●	●	●	●					

COMPETENCY/TASK

GRADE 7 DUTY AREA 4: EXPLORING PLANT SCIENCE LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7	4.1 Determine economic importance of agricultural crops.	4.2 Describe the photosynthesis process of plants.	4.3 Identify and explain methods of plant reproduction.	4.4 Demonstrate proper watering and fertilization of plants.	4.5 Identify and label plants.	4.6 Identify methods of planting or transplanting	4.7 Explain the use of hydroponics in growing plants.	4.8 Discuss new technology in plant science.	4.9 Explain career opportunities in plant science.
7.1 Use interpersonal communication skills.		●					●	●	
7.2 Adjust reading rate according to purpose and the difficulty of the material.	●	●	●				●	●	
7.3 Form concepts based on information or ideas encountered in reading.									
7.4 Acquire information from materials which pertain to survival.									
7.5 Expand range of interests through wide reading.	●	●					●	●	
7.6 Express himself or herself in writing using forms of his or her own choice.	●	●	●				●	●	
7.7 Develop a paragraph using a prewriting, writing, and revising process.	●	●	●				●	●	
7.8 Perceive the relationship between vicarious experiences in literature and direct experiences.									
7.9 Enlarge speaking, reading, and writing vocabulary.	●	●	●	●	●	●	●	●	●
7.10 Paraphrase information from written and oral materials.	●	●	●	●	●	●	●	●	●
7.11 Take notes from written, oral, or audio-visual materials.	●	●	●	●	●	●	●	●	●
7.12 Recognize the function of words within sentences.	●	●	●				●	●	

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GRADE 7

DUTY AREA 5: EXPLORING ANIMAL SCIENCE

	COMPETENCY/TASK								
LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7	5.1 Determine the importance of animals to agriculture.	5.2 Explain the importance of animal evaluation.	5.3 Identify key scientific terms used in the animal industry.	5.4 Explore the meat animal industry.	5.5 Explore the pleasure and companion animal industry	5.6 Discuss new technologies in animal science.	5.7 Discuss ethical concerns related to animal welfare.	5.8 Explore career opportunities in animal science	
7.1 Use interpersonal communication skills.		●				●	●		
7.2 Adjust reading rate according to purpose and the difficulty of the material.	●	●				●	●		
7.3 Form concepts based on information or ideas encountered in reading.									
7.4 Acquire information from materials which pertain to survival.									
7.5 Expand range of interests through wide reading.	●	●			●	●	●		
7.6 Express himself or herself in writing using forms of his or her own choice.	●	●							
7.7 Develop a paragraph using a prewriting, writing, and revising process.	●	●			●	●	●		
7.8 Perceive the relationship between vicarious experiences in literature and direct experiences.		●							
7.9 Enlarge speaking, reading, and writing vocabulary.	●	●	●	●	●	●	●	●	●
7.10 Paraphrase information from written and oral materials.	●	●	●	●	●	●	●	●	●
7.11 Take notes from written, oral, or audio-visual materials.	●	●	●	●	●	●	●	●	●
7.12 Recognize the function of words within sentences.	●				●	●			

GRADE 7

DUTY AREA 6: INTRODUCING BASIC LABORATORY SKILLS

	COMPETENCY/TASK								
LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7	6.1 Apply safety practices.	6.2 Identify types of metal.	6.3 Perform metal fabrication practices.	6.4 Read and interpret simple plans.	6.5 Identify and use basic hand tools for woodworking.	6.6 Maintain hand tools.	6.7 Select and use measuring devices.	6.8 Select and use wood fasteners.	6.9 Finish and preserve wood.
7.1 Use interpersonal communication skills.									
7.2 Adjust reading rate according to purpose and the difficulty of the material.									
7.3 Form concepts based on information or ideas encountered in reading.									
7.4 Acquire information from materials which pertain to survival.									
7.5 Expand range of interests through wide reading.									
7.6 Express himself or herself in writing using forms of his or her own choice.									
7.7 Develop a paragraph using a prewriting, writing, and revising process.									
7.8 Perceive the relationship between vicarious experiences in literature and direct experiences.									
7.9 Enlarge speaking, reading, and writing vocabulary.	•	•	•	•	•	•	•	•	•
7.10 Paraphrase information from written and oral materials.	•	•	•	•	•	•	•	•	•
7.11 Take notes from written, oral, or audio-visual materials.	•	•	•	•	•	•	•	•	•
7.12 Recognize the function of words within sentences.									

COMPETENCY/TASK

GRADE 7

DUTY AREA 7: ENCOURAGING PERSONAL DEVELOPMENT

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 7	7.1 Identify effective leadership traits.	7.2 Identify personal development needs.	7.3 Develop oral communication skills.	7.4 Develop written communication skills.	7.5 Develop an understanding of FFA.	7.6 Develop opportunities for leadership.	7.7 Develop social skills.		
7.1 Use interpersonal communication skills.	●	●	●	●	●	●	●		
7.2 Adjust reading rate according to purpose and the difficulty of the material.									
7.3 Form concepts based on information or ideas encountered in reading.									
7.4 Acquire information from materials which pertain to survival.									
7.5 Expand range of interests through wide reading.			●	●					
7.6 Express himself or herself in writing using forms of his or her own choice.		●	●	●	●	●			
7.7 Develop a paragraph using a prewriting, writing, and revising process.				●					
7.8 Perceive the relationship between vicarious experiences in literature and direct experiences.			●			●	●		
7.9 Enlarge speaking, reading, and writing vocabulary.	●	●	●	●	●	●	●		
7.10 Paraphrase information from written and oral materials.	●	●	●	●	●	●	●		
7.11 Take notes from written, oral, or audio-visual materials.	●	●	●	●	●	●	●		
7.12 Recognize the function of words within sentences.									

COMPETENCY/TASK

GRADE 7

DUTY AREA 1: RECOGNIZING THE IMPORTANCE OF AGRICULTURE/AGRISCIENCE

MATH STANDARDS OF LEARNING GRADE 7	1.1 Explain the importance of agriculture to Virginia, the United States, and to the world.	1.2 Describe the relationship of agriculture to other segments of society.							
7.1 Round a given whole number, 999,999 or less, to a specified place.									
7.2 Find the sum of four or fewer whole numbers, each 999,999 or less.		●							
7.3 Find the difference between two whole numbers, each 999,999 or less.		●							
7.4 Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.									
7.5 Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6 Add with decimals through ten-thousandths.									
7.7 Subtract with decimals through ten-thousandths.									
7.8 Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.									
7.9 Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.									
7.10 Add using fractions and mixed numerals.									
7.11 Subtract using fractions and mixed numerals.									
7.12 Multiply using fractions and mixed numerals.									
7.13 Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14 Find the ratio of two sets of objects or two measures and record it in a standard notation.									
7.15 Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16 Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.									
7.17 Identify rectangular prisms, cylinders, and cones.									
7.18 Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									
7.19 Construct a broken-line or bar graph.									
7.20 Find the average (mean) of a set of whole numbers.									
7.21 Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.									
7.22 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

GRADE 7

DUTY AREA 2: CONSERVING NATURAL RESOURCES

	COMPETENCY/TASK								
MATH STANDARDS OF LEARNING GRADE 7	2.1 Identify kinds of soil erosion.	2.2 Explain factors affecting soil erosion.	2.3 Explain the importance of conserving soils.	2.4 Discuss soil erosion control measures.	2.5 Explain soil and water conservation measures.	2.6 Review agricultural policies concerning air quality.	2.7 Give examples of how the air pollution control program works.	2.8 Explain the relationship of trees and wildlife.	2.9 Identify careers in soil and water conservation.
7.1 Round a given whole number, 999,999 or less, to a specified place.									
7.2 Find the sum of four or fewer whole numbers, each 999,999 or less.									
7.3 Find the difference between two whole numbers, each 999,999 or less.									
7.4 Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.									
7.5 Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6 Add with decimals through ten-thousandths.									
7.7 Subtract with decimals through ten-thousandths.									
7.8 Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.									
7.9 Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.									
7.10 Add using fractions and mixed numerals.									
7.11 Subtract using fractions and mixed numerals.									
7.12 Multiply using fractions and mixed numerals.									
7.13 Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14 Find the ratio of two sets of objects or two measures and record it in a standard notation.									
7.15 Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16 Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.									
7.17 Identify rectangular prisms, cylinders, and cones.									
7.18 Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									
7.19 Construct a broken-line or bar graph.									
7.20 Find the average (mean) of a set of whole numbers.									
7.21 Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.									
7.22 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

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COMPETENCY/TASK

GRADE 7

DUTY AREA 3: EXPLORING RESEARCH IN AGRICULTURE

MATH STANDARDS OF LEARNING GRADE 7		3.1 Explain the impact of agricultural research.	3.2 Identify agricultural research in animal science.	3.3 Identify agricultural research in plant science.	3.4 Identify research in agricultural engineering technology.	3.5 Explore career opportunities in agricultural research.				
7.1	Round a given whole number, 999,999 or less, to a specified place.									
7.2	Find the sum of four or fewer whole numbers, each 999,999 or less.					●				
7.3	Find the difference between two whole numbers, each 999,999 or less.									
7.4	Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.					●				
7.5	Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6	Add with decimals through ten-thousandths.									
7.7	Subtract with decimals through ten-thousandths.									
7.8	Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.									
7.9	Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.									
7.10	Add using fractions and mixed numerals.					●				
7.11	Subtract using fractions and mixed numerals.					●				
7.12	Multiply using fractions and mixed numerals.					●				
7.13	Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14	Find the ratio of two sets of objects or two measures and record it in a standard notation.									
7.15	Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16	Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.									
7.17	Identify rectangular prisms, cylinders, and cones.									
7.18	Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									
7.19	Construct a broken-line or bar graph.					●				
7.20	Find the average (mean) of a set of whole numbers.					●				
7.21	Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.					●				
7.22	Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.					●				

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GRADE 7

DUTY AREA 4: EXPLORING PLANT SCIENCE

COMPETENCY/TASK

MATH STANDARDS OF LEARNING GRADE 7		4.1 Determine economic importance of agricultural crops.	4.2 Describe the photosynthesis process of plants.	4.3 Identify and explain methods of plant reproduction.	4.4 Demonstrate proper watering and fertilization of plants.	4.5 Identify and label plants.	4.6 Identify methods of planting or transplanting	4.7 Explain the use of hydroponics in growing plants.	4.8 Discuss new technology in plant science.	4.9 Explain career opportunities in plant science.
7.1	Round a given whole number, 999,999 or less, to a specified place.	•								
7.2	Find the sum of four or fewer whole numbers, each 999,999 or less.									
7.3	Find the difference between two whole numbers, each 999,999 or less.									
7.4	Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.	•								
7.5	Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6	Add with decimals through ten-thousandths.									
7.7	Subtract with decimals through ten-thousandths.									
7.8	Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.									
7.9	Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.									
7.10	Add using fractions and mixed numerals.									
7.11	Subtract using fractions and mixed numerals.									
7.12	Multiply using fractions and mixed numerals.									
7.13	Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14	Find the ratio of two sets of objects or two measures and record it in a standard notation.	•								
7.15	Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16	Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.									
7.17	Identify rectangular prisms, cylinders, and cones.									
7.18	Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									
7.19	Construct a broken-line or bar graph.	•								
7.20	Find the average (mean) of a set of whole numbers.									
7.21	Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.	•								
7.22	Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.	•								

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GRADE 7

DUTY AREA 5: EXPLORING ANIMAL SCIENCE

		COMPETENCY/TASK								
MATH STANDARDS OF LEARNING GRADE 7		5.1 Determine the importance of animals to agriculture.	5.2 Explain the importance of animal evaluation.	5.3 Identify key scientific terms used in the animal industry.	5.4 Explore the meat animal industry.	5.5 Explore the pleasure and companion animal industry	5.6 Discuss new technologies in animal science.	5.7 Discuss ethical concerns related to animal welfare.	5.8 Explore career opportunities in animal science.	
7.1	Round a given whole number, 999,999 or less, to a specified place.									
7.2	Find the sum of four or fewer whole numbers, each 999,999 or less.									
7.3	Find the difference between two whole numbers, each 999,999 or less.									
7.4	Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.	•								
7.5	Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6	Add with decimals through ten-thousandths.									
7.7	Subtract with decimals through ten-thousandths.									
7.8	Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.									
7.9	Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.									
7.10	Add using fractions and mixed numerals.									
7.11	Subtract using fractions and mixed numerals.									
7.12	Multiply using fractions and mixed numerals.									
7.13	Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14	Find the ratio of two sets of objects or two measures and record it in a standard notation.									
7.15	Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16	Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.									
7.17	Identify rectangular prisms, cylinders, and cones.									
7.18	Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									
7.19	Construct a broken-line or bar graph.	•								
7.20	Find the average (mean) of a set of whole numbers.									
7.21	Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.									
7.22	Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

COMPETENCY/TASK

GRADE 7

DUTY AREA 6: INTRODUCING BASIC LABORATORY SKILLS

MATH STANDARDS OF LEARNING GRADE 7	6.1 Apply safety practices.	6.2 Identify types of metal.	6.3 Perform metal fabrication practices.	6.4 Read and interpret simple plans.	6.5 Identify and use basic hand tools for woodworking.	6.6 Maintain hand tools.	6.7 Select and use measuring devices.	6.8 Select and use wood fasteners.	6.9 Finish and preserve wood.
7.1 Round a given whole number, 999,999 or less, to a specified place.									
7.2 Find the sum of four or fewer whole numbers, each 999,999 or less.									
7.3 Find the difference between two whole numbers, each 999,999 or less.									
7.4 Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.									
7.5 Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6 Add with decimals through ten-thousandths.									
7.7 Subtract with decimals through ten-thousandths.									
7.8 Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.			●						
7.9 Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.			●						
7.10 Add using fractions and mixed numerals.			●						
7.11 Subtract using fractions and mixed numerals.									
7.12 Multiply using fractions and mixed numerals.									
7.13 Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14 Find the ratio of two sets of objects or two measures and record it in a standard notation.									
7.15 Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16 Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.				●					
7.17 Identify rectangular prisms, cylinders, and cones.									
7.18 Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									●
7.19 Construct a broken-line or bar graph.									
7.20 Find the average (mean) of a set of whole numbers.									
7.21 Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.			●						
7.22 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.			●						

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COMPETENCY/TASK

GRADE 7

DUTY AREA 7: ENCOURAGING PERSONAL DEVELOPMENT

MATH STANDARDS OF LEARNING GRADE 7	7.1 Identify effective leadership traits.	7.2 Identify personal development needs.	7.3 Develop oral communication skills.	7.4 Develop written communication skills.	7.5 Develop an understanding of FFA.	7.6 Develop opportunities for leadership.	7.7 Develop social skills.		
7.1 Round a given whole number, 999,999 or less, to a specified place.									
7.2 Find the sum of four or fewer whole numbers, each 999,999 or less.									
7.3 Find the difference between two whole numbers, each 999,999 or less.									
7.4 Find the product of two whole numbers, when one factor is 9,999 or less and the other factor is 999 or less.									
7.5 Find the quotient of two whole numbers, given a dividend of five digits or less and a divisor of three digits or less.									
7.6 Add with decimals through ten-thousandths.									
7.7 Subtract with decimals through ten-thousandths.									
7.8 Find the product of two numbers expressed as decimals such that the product contains no more than four decimal places.									
7.9 Divide with decimals, given a dividend of no more than four digits and no more than three decimal places and a divisor of no more than three digits and no more than two decimal places.									
7.10 Add using fractions and mixed numerals.									
7.11 Subtract using fractions and mixed numerals.									
7.12 Multiply using fractions and mixed numerals.									
7.13 Express common fractions having denominators of 2, 3, 4, 5, 8 and 10 as decimals.									
7.14 Find the ratio of two sets of objects or two measures and record it in a standard notation.									
7.15 Measure length in each of the following units: inches, feet or yards; centimeters or meters.									
7.16 Determine the area and perimeter of a square, rectangle, and triangle, given the dimensions and corresponding formulas.									
7.17 Identify rectangular prisms, cylinders, and cones.									
7.18 Measure the amounts of liquid using ounces, quarts, or gallons as well as milliliters or liters.									
7.19 Construct a broken-line or bar graph.									
7.20 Find the average (mean) of a set of whole numbers.									
7.21 Solve problems dealing with everyday situations requiring the use of addition, subtraction, multiplication, and division of whole numbers and decimals; and addition, subtraction and multiplication of fractions.									
7.22 Determine if a given problem includes sufficient data to solve the problem or contains unnecessary information for solving the problem.									

COMPETENCY/TASK

GRADE 7

DUTY AREA 1: RECOGNIZING THE IMPORTANCE OF AGRICULTURE/AGRISCIENCE

SCIENCE STANDARDS OF LEARNING GRADE 7--LIFE SCIENCE		1.1 Explain the importance of agriculture to Virginia, the United States, and to the world.	1.2 Describe the relationship of agriculture to other segments of society.							
7.1	Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.	•	•							
7.2	Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.									
7.3	Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.									
7.4	Demonstrate proper handling and care of organisms and show respect for life and property.									
7.5	Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.	•	•							
7.6	Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.	•								
7.7	Construct and interpret cell models.									
7.8	Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.									
7.9	Determine the relationship between life needs and life functions.		•							
7.10	Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.									
7.11	Perform experiments and interpret data illustrating the process of photosynthesis.									
7.12	Describe the utilization of matter and energy within an organism.									
7.13	Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.									
7.14	Investigate relationships that exist among members of a population, using field and laboratory activities.									
7.15	Investigate relationships among organisms in a biological community, using field and laboratory activities.									
7.16	Compare and contrast biomes by examining relationships between abiotic and biotic factors.									
7.17	Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.									
7.18	Investigate the ways in which human impact upon the environment affects living things.		•							
7.19	Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.		•							
7.20	Examine the effects of heredity and environment upon organisms.									
7.21	Describe the theory of evolution.									

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COMPETENCY/TASK

GRADE 7

DUTY AREA 2: CONSERVING NATURAL RESOURCES

SCIENCE STANDARDS OF LEARNING GRADE 7--LIFE SCIENCE		2.1 Identify kinds of soil erosion.	2.2 Explain factors affecting soil erosion.	2.3 Explain the importance of conserving soils.	2.4 Discuss soil erosion control measures.	2.5 Explain soil and water conservation measures.	2.6 Review agricultural policies concerning air quality.	2.7 Give examples of how the air pollution control program works.	2.8 Explain the relationship of trees and wildlife.	2.9 Identify careers in soil and water conservation.
7.1	Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.	●	●	●	●	●	●	●	●	●
7.2	Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.								●	
7.3	Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.						●			
7.4	Demonstrate proper handling and care of organisms and show respect for life and property.									
7.5	Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.	●	●	●	●	●	●	●	●	●
7.6	Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.							●		●
7.7	Construct and interpret cell models.									
7.8	Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.					●		●		
7.9	Determine the relationship between life needs and life functions.					●		●		
7.10	Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.							●		
7.11	Perform experiments and interpret data illustrating the process of photosynthesis.							●		
7.12	Describe the utilization of matter and energy within an organism.									
7.13	Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.							●		
7.14	Investigate relationships that exist among members of a population, using field and laboratory activities.							●		
7.15	Investigate relationships among organisms in a biological community, using field and laboratory activities.							●	●	
7.16	Compare and contract biomes by examining relationships between abiotic and biotic factors.									
7.17	Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.	●	●	●	●	●	●	●	●	●
7.18	Investigate the ways in which human impact upon the environment affects living things.	●	●	●	●	●	●	●	●	●
7.19	Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.	●	●	●	●	●	●	●	●	●
7.20	Examine the effects of heredity and environment upon organisms.									
7.21	Describe the theory of evolution.									

GRADE 7

DUTY AREA 3: EXPLORING RESEARCH IN AGRICULTURE

COMPETENCY/TASK

SCIENCE STANDARDS OF LEARNING GRADE 7--LIFE SCIENCE		3.1 Explain the impact of agricultural research.	3.2 Identify agricultural research in animal science.	3.3 Identify agricultural research in plant science.	3.4 Identify research in agricultural engineering technology.	3.5 Explore career opportunities in agricultural research.				
7.1	Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.		●	●		●				
7.2	Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.			●						
7.3	Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.									
7.4	Demonstrate proper handling and care of organisms and show respect for life and property.									
7.5	Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.	●	●	●	●	●				
7.6	Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.		●	●	●	●				
7.7	Construct and interpret cell models.									
7.8	Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.		●	●						
7.9	Determine the relationship between life needs and life functions.									
7.10	Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.									
7.11	Perform experiments and interpret data illustrating the process of photosynthesis.		●	●						
7.12	Describe the utilization of matter and energy within an organism.									
7.13	Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.									
7.14	Investigate relationships that exist among members of a population, using field and laboratory activities.									
7.15	Investigate relationships among organisms in a biological community, using field and laboratory activities.									
7.16	Compare and contract biomes by examining relationships between abiotic and biotic factors.									
7.17	Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.									
7.18	Investigate the ways in which human impact upon the environment affects living things.		●							
7.19	Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.			●						
7.20	Examine the effects of heredity and environment upon organisms.									
7.21	Describe the theory of evolution.									

COMPETENCY/TASK

GRADE 7

DUTY AREA 4: EXPLORING PLANT SCIENCE

SCIENCE STANDARDS OF LEARNING
GRADE 7--LIFE SCIENCE

		4.1 Determine economic importance of agricultural crops.	4.2 Describe the photosynthesis process of plants.	4.3 Identify and explain methods of plant reproduction.	4.4 Demonstrate proper watering and fertilization of plants.	4.5 Identify and label plants.	4.6 Identify methods of planting or transplanting	4.7 Explain the use of hydroponics in growing plants.	4.8 Discuss new technology in plant science.	4.9 Explain career opportunities in plant science.
7.1	Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.	●	●	●	●	●	●	●	●	●
7.2	Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.		●	●	●	●	●	●	●	
7.3	Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.		●	●				●	●	
7.4	Demonstrate proper handling and care of organisms and show respect for life and property.			●	●	●	●			
7.5	Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.	●	●	●	●	●	●	●	●	●
7.6	Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.								●	●
7.7	Construct and interpret cell models.									
7.8	Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.									
7.9	Determine the relationship between life needs and life functions.		●				●			
7.10	Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.									
7.11	Perform experiments and interpret data illustrating the process of photosynthesis.		●							
7.12	Describe the utilization of matter and energy within an organism.		●							
7.13	Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.			●						
7.14	Investigate relationships that exist among members of a population, using field and laboratory activities.									
7.15	Investigate relationships among organisms in a biological community, using field and laboratory activities.							●		
7.16	Compare and contract biomes by examining relationships between abiotic and biotic factors.									
7.17	Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.						●			
7.18	Investigate the ways in which human impact upon the environment affects living things.									
7.19	Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.									
7.20	Examine the effects of heredity and environment upon organisms.									
7.21	Describe the theory of evolution.									

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COMPETENCY/TASK

GRADE 7

DUTY AREA 5: EXPLORING ANIMAL SCIENCE

SCIENCE STANDARDS OF LEARNING GRADE 7--LIFE SCIENCE		5.1 Determine the importance of animals to agriculture.	5.2 Explain the importance of animal evaluation.	5.3 Identify key scientific terms used in the animal industry.	5.4 Explore the meat animal industry.	5.5 Explore the pleasure and companion animal industry	5.6 Discuss new technologies in animal science.	5.7 Discuss ethical concerns related to animal welfare.	5.8 Explore career opportunities in animal science	
7.1	Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.	●	●	●	●	●	●	●	●	
7.2	Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.						●			
7.3	Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.									
7.4	Demonstrate proper handling and care of organisms and show respect for life and property.			●	●	●				
7.5	Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.	●	●	●	●	●	●	●	●	
7.6	Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.							●	●	
7.7	Construct and interpret cell models.									
7.8	Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.						●			
7.9	Determine the relationship between life needs and life functions.									
7.10	Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.									
7.11	Perform experiments and interpret data illustrating the process of photosynthesis.									
7.12	Describe the utilization of matter and energy within an organism.									
7.13	Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.									
7.14	Investigate relationships that exist among members of a population, using field and laboratory activities.									
7.15	Investigate relationships among organisms in a biological community, using field and laboratory activities.									
7.16	Compare and contract biomes by examining relationships between abiotic and biotic factors.									
7.17	Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.									
7.18	Investigate the ways in which human impact upon the environment affects living things.							●		
7.19	Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.	●								
7.20	Examine the effects of heredity and environment upon organisms.		●							
7.21	Describe the theory of evolution.									

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COMPETENCY/TASK

GRADE 7

DUTY AREA 6: INTRODUCING BASIC LABORATORY SKILLS

SCIENCE STANDARDS OF LEARNING GRADE 7--LIFE SCIENCE	6.1 Apply safety practices.	6.2 Identify types of metal.	6.3 Perform metal fabrication practices.	6.4 Read and interpret simple plans.	6.5 Identify and use basic hand tools for woodworking.	6.6 Maintain hand tools.	6.7 Select and use measuring devices.	6.8 Select and use wood fasteners.	6.9 Finish and preserve wood.
7.1 Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.									
7.2 Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.	•	•	•	•	•	•	•	•	•
7.3 Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.									
7.4 Demonstrate proper handling and care of organisms and show respect for life and property.									
7.5 Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.	•	•	•	•	•	•	•	•	•
7.6 Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.									
7.7 Construct and interpret cell models.									
7.8 Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.									
7.9 Determine the relationship between life needs and life functions.									
7.10 Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.									
7.11 Perform experiments and interpret data illustrating the process of photosynthesis.									
7.12 Describe the utilization of matter and energy within an organism.									
7.13 Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.									
7.14 Investigate relationships that exist among members of a population, using field and laboratory activities.									
7.15 Investigate relationships among organisms in a biological community, using field and laboratory activities.									
7.16 Compare and contract biomes by examining relationships between abiotic and biotic factors.									
7.17 Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.									
7.18 Investigate the ways in which human impact upon the environment affects living things.									
7.19 Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.									
7.20 Examine the effects of heredity and environment upon organisms.									
7.21 Describe the theory of evolution.									

COMPETENCY/TASK

GRADE 7

DUTY AREA 7: ENCOURAGING PERSONAL DEVELOPMENT

SCIENCE STANDARDS OF LEARNING GRADE 7--LIFE SCIENCE		7.1 Identify effective leadership traits.	7.2 Identify personal development needs.	7.3 Develop oral communication skills.	7.4 Develop written communication skills.	7.5 Develop an understanding of FFA.	7.6 Develop opportunities for leadership.	7.7 Develop social skills.		
7.1	Use the basic process skills and employ the integrated process skills as a basis for solving problems or answering questions about the environment.									
7.2	Demonstrate safe and appropriate use of tools and scientific equipment for making observations about the living environment.									
7.3	Exhibit evidence of personal growth and improvement by being able to select, plan, implement, and evaluate increasingly complex science experiments.									
7.4	Demonstrate proper handling and care of organisms and show respect for life and property.									
7.5	Work independently and as a member of small and large groups within the classroom, in the laboratory, and during field experiences.									
7.6	Explore the relationship of life science to student interests, career opportunities, and historical contributions to science.									
7.7	Construct and interpret cell models.									
7.8	Investigate the structural and functional organization of living things, using microvisual and visual equipment to examine cells, tissues, organs, and systems.									
7.9	Determine the relationship between life needs and life functions.									
7.10	Recognize the basis for standard classification schemes by grouping plants and animals according to their characteristics and by designing and using a dichotomous (two-factor) key.									
7.11	Perform experiments and interpret data illustrating the process of photosynthesis.									
7.12	Describe the utilization of matter and energy within an organism.									
7.13	Illustrate the flow of energy and matter among organisms in food chains, webs, and pyramids.									
7.14	Investigate relationships that exist among members of a population, using field and laboratory activities.									
7.15	Investigate relationships among organisms in a biological community, using field and laboratory activities.									
7.16	Compare and contract biomes by examining relationships between abiotic and biotic factors.									
7.17	Identify the daily, seasonal, and long-term changes that occur in ecosystems, communities, populations, and organisms.									
7.18	Investigate the ways in which human impact upon the environment affects living things.									
7.19	Describe conservation as a necessary practice in human efforts to protect and use wisely the living resources of the earth.									
7.20	Examine the effects of heredity and environment upon organisms.									
7.21	Describe the theory of evolution.									

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Matrices for Agriscience and Technology 8004

(Grade 8)

GRADE 8

DUTY AREA 1: IDENTIFYING NEW TECHNOLOGIES IN AGRICULTURE/AGRISCIENCE

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8	COMPETENCY/TASK								
	1.1 Examine the application of computers to agricultural management.	1.2 Explore new technologies in animal science.	1.3 Explore new technologies in plant science.	1.4 Explore new technologies in agricultural engineering.	1.5 Explore new technologies in environmental areas.	1.6 Explore new strategies in agricultural marketing.			
8.1 Participate in the oral reading and/or performance of dramatic materials.	●	●	●	●	●	●			
8.2 Adapt oral and written language to a particular audience, occasion, and purpose.	●	●	●	●	●	●			
8.3 Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.									
8.4 Read the newspaper for a variety of purposes.	●	●	●	●	●	●			
8.5 Discern the author's purposes.	●	●	●	●	●	●			
8.6 Record regularly experiences, thoughts, and feelings.									
8.7 Write short narrative fiction.									
8.8 Write coherent paragraphs using effective methods of arranging details.	●	●	●	●	●	●			
8.9 Write, revise, and proofread papers of more than one paragraph.	●	●	●	●	●	●			
8.10 Write business letters for various purposes.	●	●	●	●	●	●			
8.11 Compare themes in adolescent literature with personal experiences.									
8.12 Understand the basic methods the author uses in creating characters.									
8.13 Complete forms and applications.									
8.14 Use appropriate pronouns and antecedents.									
8.15 Identify influences of the mass media on the individual and on society.	●				●				

COMPETENCY/TASK

GRADE 8

DUTY AREA 2: UNDERSTANDING INTERNATIONAL AGRICULTURE

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8		2.1 Define exports.	2.2 Define imports.	2.3 Define tariffs.	2.4 Explain the relationship of international trade to Virginia agriculture.	2.5 Identify factors that affect trade agreements.	2.6 Explore careers in international agriculture.			
8.1	Participate in the oral reading and/or performance of dramatic materials.				•	•				
8.2	Adapt oral and written language to a particular audience, occasion, and purpose.									
8.3	Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.									
8.4	Read the newspaper for a variety of purposes.	•	•	•	•	•				
8.5	Discern the author's purposes.									
8.6	Record regularly experiences, thoughts, and feelings.									
8.7	Write short narrative fiction.									
8.8	Write coherent paragraphs using effective methods of arranging details.				•	•				
8.9	Write, revise, and proofread papers of more than one paragraph.				•	•	•			
8.10	Write business letters for various purposes.				•	•				
8.11	Compare themes in adolescent literature with personal experiences.									
8.12	Understand the basic methods the author uses in creating characters.									
8.13	Complete forms and applications.									
8.14	Use appropriate pronouns and antecedents.									
8.15	Identify influences of the mass media on the individual and on society.					•				

GRADE 8

DUTY AREA 3: UNDERSTANDING AGRICULTURAL BUSINESSES

	COMPETENCY/TASK								
LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8	3.1 Identify the role of agribusiness in agriculture.	3.2 Discuss free enterprise and the economy.	3.3 Define entrepreneur.	3.4 Recognize personal potential as an entrepreneur.	3.5 Identify career opportunities in agribusiness.	3.6 Describe the role and function of an agribusiness manager.			
8.1 Participate in the oral reading and/or performance of dramatic materials.					•				
8.2 Adapt oral and written language to a particular audience, occasion, and purpose.					•				
8.3 Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.									
8.4 Read the newspaper for a variety of purposes.	•	•	•		•				
8.5 Discern the author's purposes.	•				•				
8.6 Record regularly experiences, thoughts, and feelings.				•					
8.7 Write short narrative fiction.				•					
8.8 Write coherent paragraphs using effective methods of arranging details.					•				
8.9 Write, revise, and proofread papers of more than one paragraph.	•	•				•			
8.10 Write business letters for various purposes.						•			
8.11 Compare themes in adolescent literature with personal experiences.									
8.12 Understand the basic methods the author uses in creating characters.									
8.13 Complete forms and applications.									
8.14 Use appropriate pronouns and antecedents.									
8.15 Identify influences of the mass media on the individual and on society.									

COMPETENCY/TASK

GRADE 8

DUTY AREA 4: USING MICROCOMPUTERS IN AGRICULTURE

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8	4.1 Identify components of a computer system.	4.2 Define computer terms.	4.3 Explain the proper use of diskettes.	4.4 Use word processing software.	4.5 Identify the uses of computers in agriculture.				
8.1 Participate in the oral reading and/or performance of dramatic materials.		●							
8.2 Adapt oral and written language to a particular audience, occasion, and purpose.									
8.3 Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.									
8.4 Read the newspaper for a variety of purposes.					●				
8.5 Discern the author's purposes.									
8.6 Record regularly experiences, thoughts, and feelings.									
8.7 Write short narrative fiction.									
8.8 Write coherent paragraphs using effective methods of arranging details.									
8.9 Write, revise, and proofread papers of more than one paragraph.									
8.10 Write business letters for various purposes.				●					
8.11 Compare themes in adolescent literature with personal experiences.									
8.12 Understand the basic methods the author uses in creating characters.									
8.13 Complete forms and applications.									
8.14 Use appropriate pronouns and antecedents.									
8.15 Identify influences of the mass media on the individual and on society.					●				

COMPETENCY/TASK

GRADE 8

DUTY AREA 5: INTRODUCING SUPERVISED AGRICULTURAL EXPERIENCES

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8	5.1 Define supervised agricultural experience program.	5.2 Identify the types of supervised agricultural experience programs.	5.3 Describe characteristics of a successful supervised agricultural experience program.	5.4 Select and plan individual supervised agricultural experience program.	5.5 Relate supervised agricultural experience programs to FFA award programs.				
8.1 Participate in the oral reading and/or performance of dramatic materials.									
8.2 Adapt oral and written language to a particular audience, occasion, and purpose.									
8.3 Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.									
8.4 Read the newspaper for a variety of purposes.									
8.5 Discern the author's purposes.									
8.6 Record regularly experiences, thoughts, and feelings.					●				
8.7 Write short narrative fiction.									
8.8 Write coherent paragraphs using effective methods of arranging details.									
8.9 Write, revise, and proofread papers of more than one paragraph.									
8.10 Write business letters for various purposes.									
8.11 Compare themes in adolescent literature with personal experiences.									
8.12 Understand the basic methods the author uses in creating characters.		●							
8.13 Complete forms and applications.	●	●	●	●	●				
8.14 Use appropriate pronouns and antecedents.									
8.15 Identify influences of the mass media on the individual and on society.									

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COMPETENCY/TASK

GRADE 8

DUTY AREA 6: USING HAND TOOLS AND AGRICULTURAL POWER EQUIPMENT

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8	6.1 Explain, demonstrate, and practice safety.	6.2 Identify portable power equipment, hand tools, and accessories.	6.3 Demonstrate the proper use of portable power equipment hand tools, and accessories.	6.4 Perform woodworking skills.	6.5 Explain basic principlas of electricity.	6.6 Perform basic electrical wiring skills.	6.7 Cut, shape, and drill metal.	6.8 Explain the arc welding process.	6.9 Operate arc welding equipment.	6.10 Perform measuring skills.	6.11 Read, interpret, and construct plans for mechanics project.	6.12 Explain operation principles of four - stroke cycle engines.
8.1 Participate in the oral reading and/or performance of dramatic materials.												
8.2 Adapt oral and written language to a particular audience, occasion, and purpose.												
8.3 Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.												
8.4 Read the newspaper for a variety of purposes.												
8.5 Discern the author's purposes.												
8.6 Record regularly experiences, thoughts, and feelings.												
8.7 Write short narrative fiction.												
8.8 Write coherent paragraphs using effective methods of arranging details.												
8.9 Write, revise, and proofread papers of more than one paragraph.												
8.10 Write business letters for various purposes.												
8.11 Compare themes in adolescent literature with personal experiences.												
8.12 Understand the basic methods the author uses in creating characters.												
8.13 Complete forms and applications.				●	●							
8.14 Use appropriate pronouns and antecedents.												
8.15 Identify influences of the mass media on the individual and on society.												

GRADE 8

DUTY AREA 7: DEVELOPING LEADERSHIP SKILLS

COMPETENCY/TASK

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8		7.1 Complete a personal development inventory.	7.2 Explain opportunities for leadership development through FFA.	7.3 Use democratic principles in conducting an effective meeting.	7.4 Develop an understanding of the FFA.					
8.1	Participate in the oral reading and/or performance of dramatic materials.	●		●						
8.2	Adapt oral and written language to a particular audience, occasion, and purpose.	●	●	●						
8.3	Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.									
8.4	Read the newspaper for a variety of purposes.	●								
8.5	Discern the author's purposes.									
8.6	Record regularly experiences, thoughts, and feelings.									
8.7	Write short narrative fiction.									
8.8	Write coherent paragraphs using effective methods of arranging details.									
8.9	Write, revise, and proofread papers of more than one paragraph.									
8.10	Write business letters for various purposes.									
8.11	Compare themes in adolescent literature with personal experiences.									
8.12	Understand the basic methods the author uses in creating characters.									
8.13	Complete forms and applications.	●	●	●	●					
8.14	Use appropriate pronouns and antecedents.									
8.15	Identify influences of the mass media on the individual and on society.									

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COMPETENCY/TASK

GRADE 8

DUTY AREA 8: EXPERIMENTING IN AGRICULTURE

LANGUAGE ARTS STANDARDS OF LEARNING GRADE 8	8.1 Identify the components of a research project.	8.2 Practice safety procedures in performing experiments.	8.3 Perform an agricultural experiment.	8.4 Evaluate the results of an experiment.	8.5 Develop experimental reporting skills.				
8.1 Participate in the oral reading and/or performance of dramatic materials.									
8.2 Adapt oral and written language to a particular audience, occasion, and purpose.									
8.3 Enlarge vocabulary by using context clues to acquire word meaning in reading passages of increasing difficulty.					•				
8.4 Read the newspaper for a variety of purposes.									
8.5 Discern the author's purposes.									
8.6 Record regularly experiences, thoughts, and feelings.			•						
8.7 Write short narrative fiction.									
8.8 Write coherent paragraphs using effective methods of arranging details.									
8.9 Write, revise, and proofread papers of more than one paragraph.			•						
8.10 Write business letters for various purposes.			•						
8.11 Compare themes in adolescent literature with personal experiences.									
8.12 Understand the basic methods the author uses in creating characters.									
8.13 Complete forms and applications.			•	•					
8.14 Use appropriate pronouns and antecedents.									
8.15 Identify influences of the mass media on the individual and on society.									

COMPETENCY/TASK

GRADE 8

DUTY AREA 1: IDENTIFYING NEW TECHNOLOGIES IN AGRICULTURE/ AGRISCIENCE

MATH STANDARDS OF LEARNING GRADE 8		1.1 Examine the application of computers to agricultural management.	1.2 Explore new technologies in animal science.	1.3 Explore new technologies in plant science.	1.4 Explore new technologies in agricultural engineering.	1.5 Explore new technologies in environmental areas.	1.6 Explore new strategies in agricultural marketing.			
8.1	Write the word name for a given whole number 10,000 or less.									
8.2	Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3	Add, subtract, multiply, and divide whole numbers.									
8.4	Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5	Add, subtract, multiply, and divide with decimals.									
8.6	Given a number in fraction form, express it in decimal notation.									
8.7	Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8	Solve a proportion having one unknown term.									
8.9	Find a given percent of a number and what percent one number is of another.									
8.10	Solve simple linear equations having one variable.									
8.11	Measure length, mass, or liquid volume when given appropriate measuring devices.									
8.12	Compute with U. S. customary or metric units of measurement.									
8.13	Determine elapsed time when given two times within a 12-hour interval.									
8.14	Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15	Compute the perimeter of a polygon having no more than 10 sides.									
8.16	Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8,.17	Compute the area of triangles, squares, and rectangles.									
8.18	Find the volume of a right rectangular solid and a right cylinder.									
8.19	Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20	Read scales, charts, and tables.	●	●	●	●	●				
8.21	Read a simple scale drawing to find actual distances.									
8.22	Solve practical problems dealing with banking, consumer purchases, and personal earnings.									

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COMPETENCY/TASK

GRADE 8

DUTY AREA 2: UNDERSTANDING INTERNATIONAL AGRICULTURE

MATH STANDARDS OF LEARNING GRADE 8	2.1 Define exports.	2.2 Define imports.	2.3 Define tariffs.	2.4 Explain the relationship of international trade to Virginia agriculture.	2.5 Identify factors that affect trade agreements.	2.6 Explore careers in international agriculture.			
8.1 Write the word name for a given whole number 10,000 or less.									
8.2 Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3 Add, subtract, multiply, and divide whole numbers.									
8.4 Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5 Add, subtract, multiply, and divide with decimals.									
8.6 Given a number in fraction form, express it in decimal notation.									
8.7 Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8 Solve a proportion having one unknown term.									
8.9 Find a given percent of a number and what percent one number is of another.									
8.10 Solve simple linear equations having one variable.									
8.11 Measure length, mass, or liquid volume when given appropriate measuring devices.									
8.12 Compute with U. S. customary or metric units of measurement.				●					
8.13 Determine elapsed time when given two times within a 12-hour interval.				●					
8.14 Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15 Compute the perimeter of a polygon having no more than 10 sides.									
8.16 Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8,.17 Compute the area of triangles, squares, and rectangles.									
8.18 Find the volume of a right rectangular solid and a right cylinder.									
8.19 Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20 Read scales, charts, and tables.	●	●	●	●	●				
8.21 Read a simple scale drawing to find actual distances.									
8.22 Solve practical problems dealing with banking, consumer purchases, and personal earnings.									

GRADE 8

DUTY AREA 3: UNDERSTANDING AGRICULTURAL BUSINESSES

MATH STANDARDS OF LEARNING GRADE 8		3.1 Identify the role of agribusiness in agriculture.	3.2 Discuss free enterprise and the economy.	3.3 Define entrepreneur.	3.4 Recognize personal potential as an entrepreneur.	3.5 Identify career opportunities in agribusiness.	3.6 Describe the role and function of an agribusiness manager.			
8.1	Write the word name for a given whole number 10,000 or less.	●								
8.2	Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3	Add, subtract, multiply, and divide whole numbers.									
8.4	Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5	Add, subtract, multiply, and divide with decimals.									
8.6	Given a number in fraction form, express it in decimal notation.									
8.7	Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8	Solve a proportion having one unknown term.									
8.9	Find a given percent of a number and what percent one number is of another.									
8.10	Solve simple linear equations having one variable.									
8.11	Measure length, mass, or liquid volume when given appropriate measuring devices.									
8.12	Compute with U. S. customary or metric units of measurement.									
8.13	Determine elapsed time when given two times within a 12-hour interval.									
8.14	Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15	Compute the perimeter of a polygon having no more than 10 sides.									
8.16	Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8,.17	Compute the area of triangles, squares, and rectangles.									
8.18	Find the volume of a right rectangular solid and a right cylinder.									
8.19	Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20	Read scales, charts, and tables.	●	●	●	●	●				
8.21	Read a simple scale drawing to find actual distances.									
8.22	Solve practical problems dealing with banking, consumer purchases, and personal earnings.									

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COMPETENCY/TASK

GRADE 8

DUTY AREA 4: USING MICROCOMPUTERS IN AGRICULTURE

MATH STANDARDS OF LEARNING GRADE 8	4.1 Identify components of a computer system.	4.2 Define computer terms.	4.3 Explain the proper use of diskettes.	4.4 Use word processing software.	4.5 Identify the uses of computers in agriculture.				
8.1 Write the word name for a given whole number 10,000 or less.									
8.2 Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3 Add, subtract, multiply, and divide whole numbers.									
8.4 Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5 Add, subtract, multiply, and divide with decimals.									
8.6 Given a number in fraction form, express it in decimal notation.									
8.7 Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8 Solve a proportion having one unknown term.									
8.9 Find a given percent of a number and what percent one number is of another.									
8.10 Solve simple linear equations having one variable.									
8.11 Measure length, mass, or liquid volume when given appropriate measuring devices.									
8.12 Compute with U. S. customary or metric units of measurement.									
8.13 Determine elapsed time when given two times within a 12-hour interval.									
8.14 Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15 Compute the perimeter of a polygon having no more than 10 sides.									
8.16 Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8,.17 Compute the area of triangles, squares, and rectangles.									
8.18 Find the volume of a right rectangular solid and a right cylinder.									
8.19 Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20 Read scales, charts, and tables.	•	•	•	•	•				
8.21 Read a simple scale drawing to find actual distances.									
8.22 Solve practical problems dealing with banking, consumer purchases, and personal earnings.									

COMPETENCY/TASK

GRADE 8

DUTY AREA 5: INTRODUCING SUPERVISED AGRICULTURAL EXPERIENCES

SCIENCE STANDARDS OF LEARNING GRADE 8	5.1 Define supervised agricultural experience program.	5.2 Identify the types of supervised agricultural experience programs.	5.3 Describe characteristics of a successful supervised agricultural experience program.	5.4 Select and plan individual supervised agricultural experience program.	5.5 Relate supervised agricultural experience programs to FFA award programs.				
8.1 Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.									
8.2 Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.									
8.3 Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.									
8.4 Graph and interpret data from experiments on interacting matter and energy.									
8.5 Identify characteristics and examples of various types of matter by their physical and chemical properties.									
8.6 Construct and explain various models that illustrate the structure of an atom.									
8.7 Use the periodic chart for obtaining information about elements and inferring information about elements and binary compounds.									
8.8 Describe physical, chemical, and nuclear changes, using the law of conservation of matter and energy.									
8.9 Investigate energy states and forms and describe how energy is transferred, transformed, and utilized.									
8.10 Investigate the basic characteristics of light and the technological applications.									
8.11 Investigate the characteristics and technological applications of electricity and magnetism.									
8.12 Investigate the basic characteristics and technological applications of mechanical waves.									
8.13 Investigate the scientific principles and the technological applications of work.		●							
8.14 Investigate the basic principles and technological applications of force and motion.									
8.15 Apply basic physical and chemical principles to describe changes occurring in common substances and to explain the operation of household devices.									
8.16 Evaluate past and future effects of science and technology on human beings and the environment.									
8.17 Utilize reasearch skills to investigate scientific, environmental, or individually selected problems.									
8.18 Explore the relationship of physical science to student interest and career opportunities.				●					

GRADE 8

DUTY AREA 6: USING HAND TOOLS AND AGRICULTURAL POWER EQUIPMENT

COMPETENCY/TASK

MATH STANDARDS OF LEARNING GRADE 8	6.1 Explain, demonstrate, and practice safety.	6.2 Identify portable power equipment, hand tools, and accessories.	6.3 Demonstrate the proper use of portable power equipment hand tools, and accessories.	6.4 Perform woodworking skills.	6.5 Explain basic principlas of electricity.	6.6 Perform basic electrical wiring skills.	6.7 Cut, shape, and drill metal.	6.8 Explain the arc welding process.	6.9 Operate arc welding equipment.	6.10 Perform measuring skills.	6.11 Read, interpret, and construct plans for mechanics project.	6.12 Explain operation principles of four - stroke cycle engines.
8.1 Write the word name for a given whole number 10,000 or less.												
8.2 Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.												
8.3 Add, subtract, multiply, and divide whole numbers.					●					●		
8.4 Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.										●		
8.5 Add, subtract, multiply, and divide with decimals.					●					●		
8.6 Given a number in fraction form, express it in decimal notation.										●		
8.7 Add, subtract, multiply, and divide with fractions and mixed numerals.				●	●	●				●		
8.8 Solve a proportion having one unknown term.					●							
8.9 Find a given percent of a number and what percent one number is of another.										●		
8.10 Solve simple linear equations having one variable.												
8.11 Measure length, mass, or liquid volume when given appropriate measuring devices.										●		
8.12 Compute with U. S. customary or metric units of measurement.				●	●	●						
8.13 Determine elapsed time when given two times within a 12-hour interval.										●		
8.14 Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.												
8.15 Compute the perimeter of a polygon having no more than 10 sides.										●		
8.16 Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.												
8,.17 Compute the area of triangles, squares, and rectangles.				●	●	●				●		
8.18 Find the volume of a right rectangular solid and a right cylinder.										●		
8.19 Answer certain questions about information displayed in line, bar, circle, and picture graphs.												
8.20 Read scales, charts, and tables.				●	●	●				●		
8.21 Read a simple scale drawing to find actual distances.				●	●	●	●			●	●	
8.22 Solve practical problems dealing with banking, consumer purchases, and personal earnings.												

COMPETENCY/TASK

GRADE 8 DUTY AREA 7: DEVELOPING LEADERSHIP SKILLS MATH STANDARDS OF LEARNING GRADE 8	7.1 Complete a personal development inventory.	7.2 Explain opportunities for leadership development through FFA.	7.3 Use democratic principles in conducting an effective meeting.	7.4 Develop an understanding of the FFA.					
8.1 Write the word name for a given whole number 10,000 or less.									
8.2 Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3 Add, subtract, multiply, and divide whole numbers.									
8.4 Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5 Add, subtract, multiply, and divide with decimals.									
8.6 Given a number in fraction form, will express it in decimal notation.									
8.7 Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8 Solve a proportion having one unknown term.									
8.9 Find a given percent of a number and what percent one number is of another.									
8.10 Solve simple linear equations having one variable.									
8.11 Measure length, mass, or liquid volume when given appropriate measuring devices.									
8.12 Compute with U. S. customary or metric units of measurement.									
8.13 Determine elapsed time when given two times within a 12-hour interval.									
8.14 Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15 Compute the perimeter of a polygon having no more than 10 sides.									
8.16 Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8,.17 Compute the area of triangles, squares, and rectangles.									
8.18 Find the volume of a right rectangular solid and a right cylinder.									
8.19 Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20 Read scales, charts, and tables.									
8.21 Read a simple scale drawing to find actual distances.									
8.22 Solve practical problems dealing with banking, consumer purchases, and personal earnings.									

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GRADE 8

DUTY AREA 8: EXPERIMENTING IN AGRICULTURE

COMPETENCY/TASK

MATH STANDARDS OF LEARNING GRADE 8	8.1 Identify the components of a research project.	8.2 Practice safety procedures in performing experiments.	8.3 Perform an agricultural experiment.	8.4 Evaluate the results of an experiment.	8.5 Develop experimental reporting skills.				
8.1 Write the word name for a given whole number 10,000 or less.			•	•					
8.2 Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3 Add, subtract, multiply, and divide whole numbers.			•	•					
8.4 Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5 Add, subtract, multiply, and divide with decimals.									
8.6 Given a number in fraction form, express it in decimal notation.									
8.7 Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8 Solve a proportion having one unknown term.									
8.9 Find a given percent of a number and what percent one number is of another.			•	•					
8.10 Solve simple linear equations having one variable.									
8.11 Measure length, mass, or liquid volume when given appropriate measuring devices.			•	•					
8.12 Compute with U. S. customary or metric units of measurement.									
8.13 Determine elapsed time when given two times within a 12-hour interval.			•	•					
8.14 Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15 Compute the perimeter of a polygon having no more than 10 sides.									
8.16 Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8.17 Compute the area of triangles, squares, and rectangles.			•	•					
8.18 Find the volume of a right rectangular solid and a right cylinder.									
8.19 Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20 Read scales, charts, and tables.	•	•	•	•	•				
8.21 Read a simple scale drawing to find actual distances.									
8.22 Solve practical problems dealing with banking, consumer purchases, and personal earnings.									

GRADE 8

DUTY AREA 1: IDENTIFYING NEW TECHNOLOGIES IN AGRICULTURE/AGRISCIENCE

SCIENCE STANDARDS OF LEARNING GRADE 8	COMPETENCY/TASK								
	1.1 Examine the application of computers to agricultural management.	1.2 Explore new technologies in animal science.	1.3 Explore new technologies in plant science.	1.4 Explore new technologies in agricultural engineering .	1.5 Explore new technologies in environmental areas.	1.6 Explore new strategies in agricultural marketing.			
8.1 Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.					•				
8.2 Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.	•	•	•	•	•	•			
8.3 Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.									
8.4 Graph and interpret data from experiments on interacting matter and energy.		•	•	•	•	•			
8.5 Identify characteristics and examples of various types of matter by their physical and chemical properties.									
8.6 Construct and explain various models that illustrate the structure of an atom.									
8.7 Use the periodic chart for obtaining information about elements and inferring information about elements and binary compounds.									
8.8 Describe physical, chemical, and nuclear changes, using the law of conservation of matter and energy.									
8.9 Investigate energy states and forms and describe how energy is transferred, transformed, and utilized.									
8.10 Investigate the basic characteristics of light and the technological applications.									
8.11 Investigate the characteristics and technological applications of electricity and magnetism.	•								
8.12 Investigate the basic characteristics and technological applications of mechanical waves.					•				
8.13 Investigate the scientific principles and the technological applications of work.									
8.14 Investigate the basic principles and technological applications of force and motion.									
8.15 Apply basic physical and chemical principles to describe changes occurring in common substances and to explain the operation of household devices.				•					
8.16 Evaluate past and future effects of science and technology on human beings and the environment.	•	•	•	•	•	•			
8.17 Utilize reasearch skills to investigate scientific, environmental, or individually selected problems.					•				
8.18 Explore the relationship of physical science to student interest and career opportunities.	•	•	•	•	•	•			

COMPETENCY/TASK

GRADE 8

DUTY AREA 2: UNDERSTANDING INTERNATIONAL AGRICULTURE

SCIENCE STANDARDS OF LEARNING GRADE 8		2.1 Define exports.	2.2 Define imports.	2.3 Define tariffs.	2.4 Explain the relationship of international trade to Virginia agriculture.	2.5 Identify factors that affect trade agreements.	2.6 Explore careers in international agriculture.			
8.1	Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.									
8.2	Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.									
8.3	Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.									
8.4	Graph and interpret data from experiments on interacting matter and energy.									
8.5	Identify characteristics and examples of various types of matter by their physical and chemical properties.									
8.6	Construct and explain various models that illustrate the structure of an atom.									
8.7	Use the periodic chart for obtaining information about elements and inferring information about elements and binary compounds.									
8.8	Describe physical, chemical, and nuclear changes, using the law of conservation of matter and energy.									
8.9	Investigate energy states and forms and describe how energy is transferred, transformed, and utilized.									
8.10	Investigate the basic characteristics of light and the technological applications.									
8.11	Investigate the characteristics and technological applications of electricity and magnetism.									
8.12	Investigate the basic characteristics and technological applications of mechanical waves.									
8.13	Investigate the scientific principles and the technological applications of work.									
8.14	Investigate the basic principles and technological applications of force and motion.									
8.15	Apply basic physical and chemical principles to describe changes occurring in common substances and to explain the operation of household devices.									
8.16	Evaluate past and future effects of science and technology on human beings and the environment.				●					
8.17	Utilize reasearch skills to investigate scientific, environmental, or individually selected problems.				●					
8.18	Explore the relationship of physical science to student interest and career opportunities.				●		●			

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GRADE 8

DUTY AREA 3: UNDERSTANDING AGRICULTURAL BUSINESSES

COMPETENCY/TASK

SCIENCE STANDARDS OF LEARNING GRADE 8	3.1 Identify the role of agribusiness in agriculture.	3.2 Discuss free enterprise and the economy.	3.3 Define entrepreneur.	3.4 Recognize personal potential as an entrepreneur.	3.5 Identify career opportunities in agribusiness.	3.6 Describe the role and function of an agribusiness manager.			
8.1 Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.									
8.2 Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.									
8.3 Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.									
8.4 Graph and interpret data from experiments on interacting matter and energy.									
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8.15 Apply basic physical and chemical principles to describe changes occurring in common substances and to explain the operation of household devices.									
8.16 Evaluate past and future effects of science and technology on human beings and the environment.									
8.17 Utilize reasearch skills to investigate scientific, environmental, or individually selected problems.				•					
8.18 Explore the relationship of physical science to student interest and career opportunities.					•				

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GRADE 8

DUTY AREA 4: USING MICROCOMPUTERS IN AGRICULTURE

COMPETENCY/TASK

SCIENCE STANDARDS OF LEARNING GRADE 8	4.1 Identify components of a computer system.	4.2 Define computer terms.	4.3 Explain the proper use of diskettes.	4.4 Use word processing software.	4.5 Identify the uses of computers in agriculture.				
8.1 Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.									
8.2 Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.			●						
8.3 Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.									
8.4 Graph and interpret data from experiments on interacting matter and energy.									
8.5 Identify characteristics and examples of various types of matter by their physical and chemical properties.									
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8.15 Apply basic physical and chemical principles to describe changes occurring in common substances and to explain the operation of household devices.									
8.16 Evaluate past and future effects of science and technology on human beings and the environment.					●				
8.17 Utilize reasearch skills to investigate scientific, environmental, or individually selected problems.									
8.18 Explore the relationship of physical science to student interest and career opportunities.									

GRADE 8

DUTY AREA 5: INTRODUCING SUPERVISED AGRICULTURAL EXPERIENCES

MATH STANDARDS OF LEARNING GRADE 8		COMPETENCY/TASK								
		5.1 Define supervised agricultural experience program.	5.2 Identify the types of supervised agricultural experience programs.	5.3 Describe characteristics of a successful supervised agricultural experience program.	5.4 Select and plan individual supervised agricultural experience program.	5.5 Relate supervised agricultural experienc programs to FFA award programs.				
8.1	Write the word name for a given whole number 10,000 or less.									
8.2	Represent an exponential expression, the base a positive integer 12 or less, as an indicated product by using the definitions of positive integral exponents or vice versa.									
8.3	Add, subtract, multiply, and divide whole numbers.			•	•					
8.4	Compare the numerical values of two numbers named by decimals using the symbols >, <, or =.									
8.5	Add, subtract, multiply, and divide with decimals.			•	•					
8.6	Given a number in fraction form, express it in decimal notation.			•	•					
8.7	Add, subtract, multiply, and divide with fractions and mixed numerals.									
8.8	Solve a proportion having one unknown term.									
8.9	Find a given percent of a number and what percent one number is of another.									
8.10	Solve simple linear equations having one variable.									
8.11	Measure length, mass, or liquid volume when given appropriate measuring devices.									
8.12	Compute with U. S. customary or metric units of measurement.									
8.13	Determine elapsed time when given two times within a 12-hour interval.									
8.14	Classify the member of a set of geometric figures as parallel lines, perpendicular lines, obtuse angles, right angles, or acute angles.									
8.15	Compute the perimeter of a polygon having no more than 10 sides.									
8.16	Compute the circumference or area of a circle, when given a radius or diameter and the appropriate formula.									
8,.17	Compute the area of triangles, squares, and rectangles.									
8.18	Find the volume of a right rectangular solid and a right cylinder.									
8.19	Answer certain questions about information displayed in line, bar, circle, and picture graphs.									
8.20	Read scales, charts, and tables.			•	•					
8.21	Read a simple scale drawing to find actual distances.									
8.22	Solve practical problems dealing with banking, consumer purchases, and personal earnings.	•								

COMPETENCY/TASK

GRADE 8

DUTY AREA 6: USING HAND TOOLS AND AGRICULTURAL POWER EQUIPMENT

SCIENCE STANDARDS OF LEARNING GRADE 8	6.1 Explain, demonstrate, and practice safety.	6.2 Identify portable power equipment, hand tools, and acccessories.	6.3 Demonstrate the proper use of portable power equipment hand tools, and acccessories.	6.4 Perform woodworking skills.	6.5 Explain basic principlas of electricity.	6.6 Perform basic electrical wiring skills.	6.7 Cut, shape, and drill metal.	6.8 Explain the arc welding process.	6.9 Operate arc welding equipment.	6.10 Perform measuring skills.	6.11 Read, interpret, and construct plans for mechanics project.	6.12 Explain operation principles of four-stroke cycle engines.
8.1 Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.					●							
8.2 Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.	●	●	●	●	●	●	●	●	●	●	●	●
8.3 Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.			●	●	●	●				●	●	
8.4 Graph and interpret data from experiments on interacting matter and energy.												
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8.12 Investigate the basic characteristics and technological applications of mechanical waves.												
8.13 Investigate the scientific principles and the technological applications of work.				●	●	●						
8.14 Investigate the basic principles and technological applications of force and motion.												●
8.15 Apply basic physical and chemical principles to describe changes occurring in common substances and to explain the operation of household devices.												
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8.17 Utilize reasearch skills to investigate scientific, environmental, or individually selected problems.												
8.18 Explore the relationship of physical science to student interest and career opportunities.												

COMPETENCY/TASK

GRADE 8

DUTY AREA 7: DEVELOPING LEADERSHIP SKILLS

SCIENCE STANDARDS OF LEARNING GRADE 8	7.1 Complete a personal development inventory.	7.2 Explain opportunities for leadership development through FFA.	7.3 Use democratic principles in conducting an effective meeting.	7.4 Develop an understanding of the FFA.					
8.1 Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.									
8.2 Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.									
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GRADE 8 DUTY AREA 8: EXPERIMENTING IN AGRICULTURE SCIENCE STANDARDS OF LEARNING GRADE 8		8.1 Identify the components of a research project	8.2 Practice safety procedures in performing experiments	8.3 Perform an agricultural experiment.	8.4 Evaluate the results of an experiment.	8.5 Develop experimental reporting skills.				
8.1	Use process skills as a basis for defining and solving problems and answering questions related to the study of the physical environment.	•	•	•	•	•				
8.2	Demonstrate appropriate and safe use of laboratory techniques and equipment in individual and small group activities.		•	•						
8.3	Make accurate and approximate measures, using a variety of instruments and employing direct and indirect methods.			•	•	•				
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AGRISCIENCE EDUCATION
SUGGESTED RESOURCES

Agricultural Education, Inc. Stratford, Iowa.

- *Agricultural Careers Unlimited*, 1988.
- *Farm and Food Bytes: Animal Agriculture Computer Program Unit*, 1988.
- *Farm and Food Bytes: Introduction to Agriculture*, 1988.
- *Farm and Food Bytes: Soil and Water Conservation Computer Program*, 1988.

Agricultural Education Service. *Forestry in Agricultural Education in Virginia.* Richmond, Virginia: Virginia Department of Education, 1985.

Agricultural Tools Identification. Durham, North Carolina: Chris-Mark Industries,. 1987.

American Association for Vocational Instructional Materials (AAVIM). Athens, Georgia.

- *Electrical Terms.*
- *Electrical Energy.*
- *Understanding Electricity.*

Animal Agriculture--Myths and Facts. Arlington, Virginia: Animal Industry Foundation, 1989.

Burke, Stanley, and Hillison, John. *Agriculture in the Classroom.* Richmond, Virginia: Virginia Farm Bureau Federation, 1986.

Camp, William G., and Daughtery, Thomas B. *Managing Our Natural Resources.* Albany, New York: Delmar Publishers, 1988.

Cooper, Elmer L. *Agricultural Mechanics Fundamentals and Applications.* Albany, New York: Delmar Publishers, 1988.

Cooper, Elmer L. *Agriscience, Fundamentals and Applications.* Albany, New York: Delmer Publishers, 1990.

Farm Fun Book. Richmond, Virginia: Virginia Farm Bureau Federation.

Gillespie, James A. *Modern Livestock and Poultry Production.* Albany, New York: Delmar Publishers, 1989.

Hughes, Harold A. *Conservation Farming.* Moline, Illinois: Deere and Company, 1980.

Improving Communication. Columbus, Ohio: The Ohio State University.

Krebs, Alfred H. *Agriculture in Our Lives.* 5th ed. Danville, Illinois: Interstate Printers and Publishers, 1984.

National FFA Supply Service. Alexandria, Virginia.

FFA Leadership Personal Development Series.
FFA Student Handbook.

Reilly, H.E., and Shry, Carroll L. *Introductory Horticulture.* Albany, New York: Delmar Publishers, 1988.

Science Fairs: A Handbook for High School Teachers. College Station, Texas: Vocational Instructional Services.

Shop Equipment, Safety, and Operation (Teacher's Manual). Blacksburg, Virginia: Virginia Polytechnic Institute and State University.

The Science Workshop. Columbus, Ohio: College of Agriculture, The Ohio State University, 1985.

U.S. Department of Agriculture. *Marketing--1988 Yearbook of Agriculture.* Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Agriculture, Soil Conservation Service. *Conserving Soil.* Washington, D.C.: U.S. Government Printing Office.

Virginia Cooperative Extension Service. Blacksburg. Virginia.

Plant Reproduction, Exploring the World of Plants and Soils.
Plant Growth Factors, Exploring the World of Plants and Soils.
Your Surroundings--Conservation I.

Virginia Water Resources Research Center. Blacksburg, Virginia: Virginia Polytechnic Institute and State University.

Be Water Wise, 1988. (student and teacher publication)
Sandcastle Moats, and Petunia Bed Holes, 1988. (a book about groundwater)
Threats to Virginia's Goundwater, 1988.

Wakeman, T.J., and Burke S.R. *Modern Agricultural Mechanics.* Danville, Illinois: Interstate Printers and Publishers, 1990.

Wildlife Conservation in Virginia Richmond, Virginia: Virginia Department of Game and Inland Fisheries, 1985.

Wildlife Management Techniques Manual. 4th ed. Washington, D.C.: The Wildlife Society, 1980.

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